

David P. McGuire

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SKILLS

- ◇ Programming: C, expert level, 30+ years experience with emphasis on systems programming, and networking in embedded systems and the UNIX environment. Experience with Java applications development, and MySQL and PostgreSQL database systems. Fluent in Fortran, R, both vintage and modern FORTRAN, and assembly language on several architectures.
- ◇ Embedded systems development: firmware, RTOS design and integration, electronic circuit design, PCB layout, and prototype construction including fine-pitch SMT component handling. Hardware and firmware experience with several microcontroller families including ARM, AVR, PIC, and MCS-51. Extensive experience with analog and digital interfacing, real-time control, sensor interfacing and data acquisition, and communications in scientific, aerospace, military, and light industrial environments. Experience with energy harvesting, ultra-low-power design. Experience with wireless sensor networks using 6LoWPAN and related protocols in the IoT space.
- ◇ Networking: Cisco routers and switches, address space management, BGP, DNS and domain management, general security, mail server design and administration, mailing list management, and spam/virus control at the network level. Extensive experience with the technical side (as opposed to the artistic/content side) of web server construction and management.
- ◇ Operating systems: 30 years experience in UNIX systems administration; Sun/Oracle Solaris, SGI IRIX, IBM AIX, Cray Unicos, SCO, the BSD family, and several flavors of Linux. Experience with OpenVMS. Experience with IBM VM and z/VM, and the MVS family (MVS, OS/390, z/OS) on both vintage and modern IBM mainframe systems in both user and administrator (“sysprog”) capacities, and working familiarity with JCL and TSO. Working familiarity with OS/400 and IBM System i.
- ◇ Virtualization: Experience with VMware, Solaris Zones, and IBM’s VM family.
- ◇ Hardware: Experience with nearly all Sun/Oracle and SGI systems from their first products in the 1980s to their current systems. Experience with server-class x86 systems, IBM RS/6000, pSeries and iSeries systems, and Cray supercomputers.
- ◇ HPC: Programming and administration of Cray vector supercomputers, including Cray-specific vectorization and parallelization techniques. Fluent in the administration and programming of SiCortex supercomputers and similar clusters.

WORK HISTORY

- ◇ **Freelance Contracting**
Software development, electronic design, and network design services. Recently-completed projects (2014-2015) range from a simple vending machine controller to a counter-bioterrorism instrument developed under contract for the US military. Past projects include replacing the aging IT infrastructure of a Sarasota, FL-based retail store chain, including cash registers, using modern UNIX-based virtualization and thin client technologies, and the development of a large-scale digital video surveillance system in C using video digitizers and motion detection techniques for the US Army. That system’s custom image processing algorithms were developed on a Cray vector supercomputer.
- ◇ **Director of Engineering, Pythio USA (September 2011 – present)**
I perform and/or oversee all firmware and hardware development for the company’s cellular-connected remote control and monitoring devices. Technologies in use include custom-designed ARM-based microcontroller units, cellular modems, and RTOS firmware. Several custom controller board designs taken from concept to volume production and field deployment.

- ◇ **Director of Operations, Neuron Dynamics LLC (February 2008 – July 2011)**
I built and managed the company's geographically-diverse development and production networks, comprising several large-scale multiprocessor Sun UNIX servers, two SiCortex parallel supercomputers, and one Cray vector supercomputer.
- ◇ **CTO, CocoNet Corporation, Cape Coral, FL (February 2007 – February 2008, consultancy to present)**
I manage the company's production network consisting of a handful of Cisco routers and switches, and about a dozen Linux- and Solaris-based servers, and VMware.
- ◇ **Senior Network Engineer, The Colocation Corporation, Laurel, MD (January 2004 – January 2007)**
Handled all technical operations for the company, including network maintenance, troubleshooting, security, infrastructure buildout, and resource planning. I managed the network from my home office in Florida, and traveled to the facility in Maryland as required for on-site work a few times per year. The network consisted of six carrier-level Cisco routers, and twenty Cisco switches serving over 400 colocated customer servers.
- ◇ **Senior Developer and CTO, QYX Learning, Inc., Tampa, FL (January 2002 – January 2004)**
Responsibilities included hardware and software design and implementation of a wireless handheld computer for classroom use. Handled all circuit design and PCB layout, prototype construction, firmware, and preparation for volume production. Managed five-member development team, took project from concept to production.
- ◇ **Senior Software Developer, Cidera, Inc. (formerly SkyCache), Laurel, MD (November 1997 – January 2001, founding team)**
Designed, implemented, and patented generic object and stream encapsulation protocols, and implemented a high-speed global satellite data communications system using those protocols. Oversaw the deployment of satellite uplink facilities providing near-global satellite coverage. Managed four-member engineering team, took project from concept to production.
- ◇ **Senior Systems Engineer, DIGEX, Inc., Beltsville, MD (January 1993 – August 1997, employee #3)**
Designed, implemented and maintained all ISP facilities including shell accounts, email, Usenet newsgroups, DNS, network backups, dialup access, and monitoring systems for a user base numbering over 30,000. Managed IP address allocation for over one thousand netblocks spanning North America. Took company from "garage startup" phase through IPO and acquisition.
- ◇ **VP & Co-Founder, IST, Inc., Atlantic City, NJ (1993 – 2000)**
First commercial ISP in New Jersey. Designed, implemented, and maintained all technical operations including dialup, leased line, and web hosting services. Managed network remotely, traveling to site as required.
- ◇ **Software Engineer, SciTec, Inc., a division of TRW Space & Defense, Princeton, NJ (February 1991 – December 1992)**
Developed embedded hardware and software for Department of Defense contracts. Development areas included image processing systems, object classification via remote sensing and optical spectral analysis, LASER target designators, and airborne threat warning systems.
- ◇ **Applications Programmer, Princeton Desktop Systems, Inc., Princeton Junction, NJ (January 1988 – February 1991)**
Developed database applications, including a system to interconnect databases with page layout and typesetting systems to facilitate the creation of large-scale printed directories.
- ◇ **Electronic Technician, Princeton University, Moody Fluid Dynamics Laboratory, Princeton, NJ (September 1986 – May 1987)**
Constructed processor components for the Navier-Stokes Supercomputer, developed under NASA contract.

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- ADDITIONAL “ODD” SKILLS AND RESOURCES
- ◇ I have a scanning electron microscope in my lab, and am familiar with its theory, use, and maintenance.
 - ◇ I have some experience with the construction and maintenance of high-vacuum systems in a scientific environment.
 - ◇ I know my way around LASERs and optical technology.
 - ◇ I have a background in particle physics, radioisotopes, and particle spectroscopy.
 - ◇ Owing to my startup company background, I am skilled at putting together high-functionality data processing installations with limited financial resources.
- RANDOM ACCOMPLISHMENTS
- ◇ Third employee of one of the world’s first commercial Internet service providers, which later became one of the world’s largest. (*Digex, Winter 1992*)
 - ◇ Configured multiple independent in-chassis server systems in a way that the manufacturer of the equipment stated “could not be done”. This formed the basis of the now-ubiquitous *blade server* and ignited the hosting industry. (*“Private Domain” project, Digex, Spring 1993*)
 - ◇ Built and managed the first commercially-hosted Internet server, alawash.org, for the American Library Association of Washington. (*ALA/Digex, Summer 1993*)
 - ◇ Built and managed the first entertainment-related Internet server, MTV.com, which made the company the fifth largest data mover on the Internet at the time. (*MTV/Adam Curry/Digex, Summer 1993*)
 - ◇ Put the CIA and FEMA on the Internet for the first time, using off-site hosted servers for security management. (*Digex, Fall 1993*)
 - ◇ Put the Consumer Product Safety Commission on the Internet for the first time with leased line group. (*Digex, Fall 1993*)
 - ◇ Put the World Bank on the Internet for the first time. (*Digex, Fall 1993*)
 - ◇ Received NASA Public Service Award for delivering Internet-based Earth Science educational programs to the Maryland Secondary School System. (*Digex/NASA Goddard Space Flight Center, May 1995*)
 - ◇ President and Curator of the Large Scale Systems Museum, a public museum which showcases and demonstrates over fifty functional minicomputers, mainframes, and supercomputers from the 1950s to the 1990s. (*October 2015*)
- THINGS YOU SHOULD KNOW
- I maintain a well-equipped software development environment in my facility comprising several large-scale commercial UNIX (Solaris) systems, as well as several supercomputers and IBM mainframes. This environment also facilitates effective telecommuting should the occasion or need arise. In addition, I have a full electronic design & prototyping lab, including schematic capture and PCB layout capabilities, through-hole and surface-mount soldering equipment for prototyping and small-volume production, large component stocks, accounts with all major component suppliers, and top-end test equipment including oscilloscopes, signal sources, logic analyzers, spectrum analyzers, vector network analyzers, and standards/calibration equipment from DC into the microwave region.
- My Microsoft Windows experience is very limited. I am able to provide network services to support Windows systems, or assist in migrating away from a legacy Windows installation, but I’ve never used it, and I intend to keep it that way. I won’t leave someone out in the cold in an emergency, but be aware that my areas of expertise lie elsewhere.
- I work best alone toward a specific goal or as a member of a small “skunk works”-style team. I am motivated and resourceful, and require little or no supervision. I seek an environment in which I am viewed as a resource for solving the most difficult of technical problems, and where I will be free to innovate in the course of solving those problems. I seek very flexible work schedules, and repay that flexibility with high quality work and innovation. I am not a sticker for hours; I do whatever it takes, whenever it’s needed, to get the job done.