ROBERT MULCAHY

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Summary

I am an experienced independent consulting and testifying expert witness who has 30 years of direct hands-on experience in numerous positions in the computer, software and computer storage industries. I have worked as a technical sales expert, a software developer and a support engineer. In these positions, I have created, sold and supported products and services that used a wide variety of technologies including fault tolerance, Linux, device drivers and Java. I have also employed and adapted many different software engineering, support, and sales practices such as agile project management, product testing, source code reviews, and compliance audits. As a technical sales expert, I have sold products based upon these technologies and practices.

My ability to translate complex technical ideas and concepts into accessible and understandable language developed primarily while in technical sales and customer service. In those roles, I engaged in frequent discussions, created and delivered formal presentations, and created and taught classes where I explained and at times defended the practices and technologies used by the company for which I worked. The audiences included executives, technical experts and/or novice end-users – and not necessarily friendly.

I also have extensive experience as an executive and manager. The teams I managed delivered many different products and services including enterprise backup, highly available systems and embedded storage virtualization software. I often selected the technologies and practices my teams used. In all cases, I was proficient with these technologies and practices. I negotiated and executed OEM, software license, support and end-user contracts and worked on copyright and intellectual property issues with in-house counsel. I also wrote formal product requirements documents, functional specifications, design specifications and contributed to and edited user manuals.

My time at both established companies, such as HP and EMC, and startups has allowed me to gain expertise with many different technologies and practices. Because of my diverse roles and positions, I have developed a rich and detailed expertise in the areas listed below.

Areas of Expertise

- Accessibility Standards (Section 508)
- Backup Software
- Cloud Computing
- Cloud Storage
- Computer Languages, including Java, C, C++ and HTML
- Distributed Computing
- Enterprise Storage
- Fault Tolerant Systems and Highly Reliable Systems
- Federal Information Processing Standards (FIPS)
- Kernel Software and Drivers
- Linux
- Microsoft Windows
- Network Storage
- Open Source Software
- Outsourcing
- Payment Card Industry Data Security Standard (PCI)
- Project Management
- RAID Storage/Storage Arrays
- Real Time Systems
- Software as a Service (SaaS)
- Software Auditing
- Software Development
- Software Engineering
- Software Life Cycle
- Software Maintenance
- Software Quality
- Software Testing
- Trade Secrets, Copyright, Patents
- UNIX
- User Documentation
- Virtualization and Virtualized Storage

LITIGATION EXPERIENCE

Independent Software Expert Witness *(2013 – Present)*

I provided technical consulting and testimony for two outside counsel firms representing the defendant in a contract dispute (*Columbia Data Products, Inc. v. Autonomy Corporation Limited*). The plaintiff claimed that the defendant improperly copied and distributed their application software and violated the copyrights on their software APIs. My work included technical forensic research, source code

analysis of the defendant's products, detailed analysis of both the defendant's and plaintiff's expert witness depositions (both live and via transcript) and extensive document discovery, research and analysis.

The focus of my work was twofold: 1) to ascertain the nature of the defendant's API technology as it related to the copyright infringement claim (their API used Microsoft's COM+ framework), and 2) to demonstrate the technical and practical reasons the defendant's copying of the application software was not in violation of the contract. I also provided deposition testimony as a 26 (a) (2) (c) & (e) witness. The court was the United States District Court for the District of Massachusetts, Boston.

Hewlett Packard/Autonomy/Iron Mountain, Southborough MA *(2010 – 2013)*

Expert Consultant & Director, Engineering – Contract Dispute

The company was the defendant in the contract dispute previously described. I provided technical consulting services and testimony for in-house and outside counsel. My work involved technical forensic research and significant investigation and experimentation to determine the behavior of the software products and APIs in question. My focus was the investigation and subsequent documentation of how copying the defendant's software application was, in fact, in compliance with the software agreement. I provided deposition testimony as a 30 (b) (6) witness. I also provided testimony for an audit conducted on behalf of the defendant by PwC.

Expert Consultant & Director, Engineering – Patent Infringement

The company was the defendant in a patent infringement case (*Oasis Research, LLC v. Iron Mountain Inc. et. al.*). I conducted technical research and analysis regarding this claim and provided deposition testimony. The court was the United States District Court, Eastern District of Texas.

Employment History

Autonomy/Hewlett Packard, Southborough MA (via acquisition of Iron Mountain Digital) *(2007 – 2013)*

Autonomy, an HP company, develops and sells a variety of knowledge management applications, enterprise search, data protection and eDiscovery applications.

Director, Engineering

I was responsible for delivering and supporting Connected Backup, an enterprise end-point cloud backup software product and service. The Connected application currently protects more than three million end-point devices (PCs, Macs and mobile devices), with the largest individual installations supporting upwards of 100,000 devices using multi-petabytes of storage.

My team consisted of 30 developers in Massachusetts and Bangalore, India and delivered a major new feature revision approximately once a year. Simultaneously, they delivered two or more maintenance releases and patches per quarter. I contributed to many aspects of the development process including, but not limited to: design, project management, customer support, and writing the product requirement and functional specifications.

I led the engineering effort to obtain certification of the Connected Backup product for the Payment Card Industry Data Security Standard (PCI), Federal Information Processing Standard 140-2 (FIPS Security), and Section 508 of the Rehabilitation Act (software accessibility).

I was a member of the Patent Review Team consisting of approximately five engineers and an attorney. Our charter was to vet the patent proposals of Iron Mountain engineers. Since anyone could and was encouraged to submit patent proposals, the team was responsible to ensure that the proposals were valid and suitable before being delivered to the legal patent submission process. Team members inspected the patent proposals for clarity, completeness, obviousness, breadth, and conducted a Novelty Search. We also helped rewrite proposals as necessary.

I managed the Performance Engineering Group, an internal service organization targeted with investigating, testing and simulating the performance and scaling characteristics of Autonomy's large-scale cloud applications. I also established an internal Autonomy QA Automation product development team, chartered to develop and deliver QA automation software.

Incipient Corporation, Waltham, MA *(2002 – 2007)*

Incipient was a venture-funded pre-IPO company focusing on network-resident embedded storage virtualization software (iNSP) and associated SAN management software. The company marketed these products to OEMs, large financial organizations and other Fortune 500 customers.

Director, Engineering

I had two primary roles: Software Development Manager and Technical Director/Architect. My development team delivered the first version of the iNSP product. Once Incipient closed several OEM partners based upon this work, I focused exclusively on the Technical Director/Architect role.

My responsibilities as the Technical Director/Architect were: 1) sell to OEM partners by creating and presenting technical material and leading detailed design discussions and 2) consult with the OEM's chief architects, development engineers, QA engineers and program managers to review designs and testing plans, resolve issues, and set priorities. I assisted in closing and supporting multiple OEMs, including Brocade, IBM, Cisco, HP and LSI (Engenio).

I also served as the technical representative to the International Committee for Information Technology Standards (INCITS) T11.5 committee, chartered to develop the Fabric Application Interface Standard (FAIS).

EMC Corporation, Cambridge, MA *(1998 – 2002)*

Director, Engineering

I was the development manager for Power Path, a host-based multi-path kernel driver that works on a number of different operating systems, including Linux, Windows, Solaris, HPUX, Netware and AIX. It provides highly reliable, fault-tolerant and increased performance connections for direct attached enterprise storage arrays. I led a team of kernel and application developers responsible for delivering multiple release of Power Path that included major feature additions, maintenance releases, and new platform support. My team also delivered a major refactoring release that introduced a common cross-platform framework that featured plug-in kernel agents.

Together with EMC marketing, I specified release content and strategy for PowerPath. I coordinated features, compatibility and joint development programs with several key EMC product lines, including Symmetrix and SYMAPI. I also led the migration of the CLARiiON product line from its reliance on a legacy multi-path driver to Power Path.

Conley Corporation, Cambridge, MA *(1997 – 1998)*

Conley was a pre-IPO software products company, specializing in host-based multi-path kernel drivers sold via OEMs. Eight months after I joined Conley, the company was acquired by EMC.

Director, Engineering

I had several leadership responsibilities at Conley, including Application Engineering, Development Management and Joint Program Management. Primary responsibilities included selling to, and providing support for, OEMs. This involved creating and presenting technical materials to prospective OEM customers, including Hitachi, EMC and IBM. I also managed a joint development PowerPath program with IBM.

Invincible Technologies Corporation, Medway, MA *(1993 – 1997)*

Invincible Technologies began as a systems integrator focused on the add-on Digital Equipment (DEC) storage market. It evolved over time to offer highly-available and clustered application servers for the Solaris, HP and other UNIX markets.

Co-Founder, Vice President of Engineering, Support and Operations

I had a wide range of responsibilities, especially while the company was in its infancy. My initial focus was building the engineering, operations and support organizations. As the company grew I focused more on Engineering Management.

My accomplishments included:

- Establishing the Engineering, Operations and Support organizations.
- Delivering a family of highly-available RAID subsystems for the Digital VMS market.
- Developing fault-tolerant Alpha-based and Ultra-Sparc application servers for the UNIX market.

I also established the customer service organization, which provided 7x24 enterprise-class service for Fortune 500 customers and built the operations team to support a $15 million business.

Clearpoint Research Corporation, Hopkinton, MA *(1988 - 1993)*

Clearpoint primarily designed and manufactured add-in memory for a variety of mini- and micro-computer platforms, including Sun, IBM, Digital, HP and Apollo. Later on, the company designed and sold storage and networking products.

Director of Customer Service

My team supported approximately 100 products including memory boards, disk and tape subsystems, Ethernet bridges, and routers. My accomplishments included:

- Building the Customer Support team to provide Enterprise Level 7x24 services – this was unique for the add-on memory industry.
- Establishing and leading the Technical Sales Engineering group to support the worldwide sales organization and the Continuing Engineering group to provide engineering maintenance and support services.

On a number of occasions, I filled various positions on an interim basis. These appointments provided me with excellent hands-on learning opportunities in Operations, Information Systems and Technical Publications.

Digital Equipment Corporation (DEC), Burlington, MA *(1987 - 1988)*

Software Consultant
I was the Senior Ultrix (UNIX) Technology Specialist for the Northeast Region. My responsibilities included:

- Consulting with, creating and delivering technical presentations to Digital's "Top 100" customers.
- Providing technical training to Digital's Regional Sales Engineering organization.
- Coordinating new product introductions, accounts planning for major customers, and serving as a technical liaison between the Ultrix Engineering Group and Corporate Product Marketing.

Charles River Data System (CRDS), Framingham, MA *(1978 - 1987)*

CRDS manufactured Digital Equipment (DEC) add-on storage systems, 68000-based microcomputers and developed UNOS – a UNIX-compatible operating system with real-time extensions.

Director of Technical Services
I established and led the Customer Support and Field Service groups that provided customer support for a worldwide customer base, and the Corporate Systems Engineering group that provided pre-sales technical support to the worldwide sales organization, and technical training for CRDS's OEMs and customers. I designed and created numerous software applications including disk-test and file transfer software.

EDUCATION

Clark University, Worcester, MA 1975
A.B. in Physics

Harvard University Extension School and 1976 - present
Boston University Metropolitan College
I continue to take numerous technical, business and general courses including Computer Data Structures, Compilers, System Architecture, Web Development, Finance, and Marketing.

MEMBERSHIPS

- Association of Computing Machinery (ACM)
- Institute of Electrical and Electronics Engineers (IEEE)

PATENTS

US patent 8,024,426 "*Non-disruptive data path upgrade using target mobility*" (20-Sept-2011).