

Andrew Frederick Cowie

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Capabilities

Open Source

Long time Open Source contributor and advocate. Lead author and maintainer of several projects, and broad contributions to many others. Experience as both a software developer and community manager. Extensive experience packaging and deploying Open Source code in production environments.

Extensive Technology Background

20 plus years in technology, particularly with the Unix and Linux operating systems. Extensive competence in IT operations management, infrastructure architecture, and re-engineering build systems. Long experience in systems administration and associated database management and network design. Remarkable success when troubleshooting, especially enterprise application and e-commerce platforms, data analytics, and end-user systems.

Designed an OpenStack based cloud infrastructure hosting platform and brought it into production, configuring high-availability, tuning performance, and creating the necessary monitoring, metering, and billing systems

Considerable software development expertise, including end-user programs, dynamic web applications, and systems tool development. Much experience of Java on Linux, supported by a strong background in C, Shell, Perl, and Python. Recent work has been building distributed systems written in Haskell coordinated with client-side presentation in JavaScript.

Business Process Improvement

Experienced in change management, process development, and using procedures to execute massive changes and upgrades to mission critical systems. Emphasis on successfully integrating people with processes. Able to make sound decisions in time-critical situations.

Consulting Experience

Able to work at levels ranging from boardroom to implementation. Extensive work in project review, change management, and improving operations practises. Solid understanding of organizational dynamics and how to work within processes to achieve goals. Skilled at financial modelling, cost control, and formulation of arguments in business plan form. Considerable experience facilitating the growth of startups and young companies, especially scaling IT systems from initial pilot projects to heavy loaded production platforms.

Accomplished Communicator

Strong presentation and communication skills. Numerous articles and papers published. Frequent speaker at conferences on topics of operations professionalism, Open Source business and development models, decision making within technology contexts, and culture in the information age.

Royal Military College

Bachelor of Engineering in Engineering Physics

Kingston, 1991-1995

Shad Valley

Science, Technology & Business

Ottawa, summer 1990

Commonwealth Bank

Development Manager, Engineering

Sydney, 2015-

Working in the Analytics and Information group on the platform which allows the bank to use machine learning, data science, and advanced modelling on its vast trove of data.

Anchor Systems

Head of Engineering

Sydney, 2013-2015

A managed hosting company active in the e-commerce market noted for providing infrastructure to GitHub and Testflight.

- Established a new direction for the company as it sought to build on its service offerings and compete in the cloud infrastructure space.
- Redefined roles of technical staff. Created an Operations group to take day to day responsibility for infrastructure, networking, and provisioning, and an Engineering group, charged with building the next generation systems for the company. Took on management of Engineering.
- Carried out design of a high-performance multi-site server and network infrastructure, choosing OpenStack, Ceph, and Infiniband to power Anchor's cloud computing platform. Completed qualification testing and brought new capacity to market. Configured the cluster, guided troubleshooting, and tested high-availability.
- Built three teams within Engineering: an Analytics team, focused on aggressively gathering metrics and building statistical model based decision capabilities to augment monitoring, troubleshooting, and capacity planning; Internal Systems, building internal tools to synchronize state between customer facing applications and enterprise back-ends; and an Infrastructure team responsible for the OpenStack deployment and future automation improvements.
- Introduced Haskell as the working language for all internal systems with a view to improving the calibre of software being developed. Doubled the size of staff doing software development, and guided those who weren't yet proficient in functional programming.
- Wrote a time-series database for system metrics called Vaultaire. A large distributed system, mostly written in Haskell with C, Python, and Haskell client libraries, zeromq as the interconnect, and data storage directly in Ceph via librados. Prototyped build and deployment systems using Docker and CoreOS to ensure repeatability when getting software into production. Presented findings at multiple conferences worldwide.

Operational Dynamics Consulting, Pty Ltd

Consulting Engineer

Sydney, 2003-2013

A boutique management consultancy working in the IT operations space and active doing software development focusing on mission critical systems and process improvement.

Systems Engineering

- Established infrastructure to help several start-up companies scale to the next level. Designed and implemented network architecture, server virtualization with KVM and libvirt, and remote access via OpenVPN and tinc. Deployed Linux throughout the enterprise on both servers and desktops. Introduced use of version control to track changes, and re-engineered deployment practises enabling them to better handle customizations made for their clients. Later assisted them with migration to public cloud.
- Reviewed the design and implementation of the core software platform being developed by a large Australian government agency. Worked with technical teams to identify issues with quality, robustness, and scalability inherent in their code. Advised senior management regarding present challenges, the performance of their staff, and options for future growth.
- Assisted a Melbourne based construction management company integrate a business intelligence suite into their product platform, including proof-of-concept analysis, decision briefings, and planning deployment by assessing impacts and coordinating release cycle. Debugged interoperability problems between Java app servers, and developed a custom authorization framework.
- Reviewed the build and testing infrastructure used by a prominent Sydney based Java software company. Recommended options for increasing automation of their systems and improving efficiency of their processes. Have subsequently tracked progress of these measures as the company has scaled.

Corporate Analysis and Business Advisory

- Designed and conducted an analysis for a consortium for consumer electronics companies with a view to encouraging vendors to better leverage Linux in their product development. Involved broad statistical assessment of changes being introduced across a range of embedded systems, and detailed examination of why changes to specific kernel modules were being made by vendors. Outcome was better understanding of barriers to patches being submitted upstream.
- Facilitated broad strategic change in a non-profit organization at corporate/board level. Helped identify their raison d'être and future direction.
- Helped an upstart Silicon Valley database company improve their product to be more successful in the Linux and Open Source space. Later advised on enhancing organization structures & refining processes used by their in-house development team.
- Researched drivers of competitive business environments, paperwork burden and cost of compliance issues for a major Canadian government ministry.
- Established an IT governance structure. Supervised tender process and vendor selection. Ensured knowledge transfer from existing projects to the staff developing the new system.

Operations Management

- Implemented systems automation for a major Australian internet hosting company. Helped them understand anti-patterns in their proposed message queue architecture and developed a RESTful design robust against failure.
- Did critical path analysis for a major upgrade to the core systems interfacing the e-commerce front-end with the mainframe back-end at the Australian financial services regulator. As the databases, operating systems, and hardware involved had breached the vendors' end-of-support horizons, this required deep technical analysis of legacy software libraries and custom in-house code. Identified risk points to senior management, helped resolve logjams between application developers and an ossified system administration team, and carried out detailed planning of the procedure to successfully complete the event.
- Participated in the early development of modern configuration management practises and later evolved to use of Puppet. Considerable custom Debian and Ubuntu packaging as an aspect of deploying software. Helped improve telemetry from production systems to diagnose failures.

- Introduced a new operations methodology. Through analysis, planning, execution and knowledge capture, have taught clients how to write effective procedures for undertaking changes and upgrades to mission critical systems.

Software Development & Research

- Wrote a text processing system for technical reports and manuscripts, including design of file formats, implementation of a novel user interface for authoring documents, and implementation of a variety of rendering back-ends. XML schema design, Pango font management, Cairo graphics rendering, and PDF output.

GNOME Desktop

Project Lead – Java bindings

Worldwide, 2006-2011

GNOME is the free software desktop used by numerous Linux operating system vendors; java-gnome is a library allowing developers to write native GTK programs from the Java programming language.

- Completely re-engineered a large Open Source project. Developed a new approach to the problem space by clarifying the audience and setting objectives for the project accordingly. Redesigned the internal architecture, and achieved buy-in from existing users.
- Five years of intense software engineering has brought the design into reality and seen the growth of a global community of contributors. The code base now exceeds 110K lines of code; the library is mostly Java and C with supporting utilities in Python and Perl.
- Created a new website to promote the revitalized project. Succeeded in getting the library packaged in several major Linux distros, and traveled frequently presenting the project at technical conferences.

Upoc, Inc

Director of Operations

New York, 2000-2002

A new-media startup doing group chat via text messages. One of the first companies to enable marketing campaigns to reach consumers through their mobile devices. Our production internet platform delivered over 5% of the daily SMS traffic in North America.

- Responsible for all corporate IT including vendor relations, research of available options, cost/benefit analysis and implementation of new technologies. Maintained 24/7 availability of the production site. Monitored system performance and responsiveness, directed troubleshooting and process improvement. Performed crisis management during emergencies, including a successful recovery from the Sept 11 terrorist attacks.
- Project managed deployment of production network and systems, including initial rollout, installation, configuration, and integration testing. Handled multiple instances of hardware refresh, site moves, and deployment of software upgrades. Optimized network designs to ensure availability, efficiency, and security.
- Recruited and managed a large sysadmin team. Supervised all aspects of systems administration in both the production platform (Java on Solaris Unix) and in the corporate office (Unix, Linux and Windows) as well as Oracle databases and Cisco network backbone.
- Developed robust automation to enhance reliability; dramatically improved efficiency of critical infrastructure processes enabling the deployment cycle to run 86% faster.
- Coordinated interactions between operations, development, and creative departments to effect release of new versions of the production application. Oversaw day-to-day testing, validation, and deployment of upgrades. Implemented procedures to reduce human error and improve efficiency.

ShadNet Online Community

Co-Founder & Technical Architect

Toronto, 1996-1999

An early web platform intended to foster relations and interaction amongst members of an alumni organization.

- Initiated project. Gained organizational approval to proceed, championed project through a stage-gate evaluation model, and obtained funding. Conducted public relations leading up to initial launch. Kept developers focused, motivated, and on track. To increase resources available, successfully advocated moving the ShadNet code base to a distributed development model under an Open Source license.
- Won approval for use of Linux operating system. Designed the functional interface to the system. Conducted usability trials.
- Authored (in Java and Perl) a front-end messaging client for users and the back end session management server for the site, enabling a sense of community.

Canadian Military

Infantry Officer

Canada and Europe, 1991-2000

The Royal Canadian Regiment

- Proven leadership and decision making abilities under conditions of high stress and time pressure. Exercised direct management responsibility over 40 subordinates. Participated in higher echelon planning and problem solving.
- Ran numerous leadership and skills courses for both officer-cadets and recruit soldiers. Developed a new leadership course for senior NCOs at the Infantry School.
- Deployed operationally with NATO SFOR to Bosnia during the Kosovo campaign. Participated in multinational coordination and team building. Commanded soldiers in combined operations.

Digital Equipment Corporation

Systems Administrator

Toronto, summer 1990

A publicly traded multinational corporation noted in its day for their high-end mainframes as well as their innovation in corporate desktops and workstations.

- Introduced new ideas and capabilities into a major computer corporation, assisting their transition from VMS technologies to Unix based ones.

Directorships

Canadian Centre for Creative Technology

Member, Board of Directors

1996-2006

A not-for-profit non-governmental organization determined to promote excellence in youth and to help develop innovative leaders.

- Corporate governance experience, particularly in areas of long-term visioning and strategic planning. Focused on project development, program quality control, and fiscal management.

Linux Australia, Inc

Secretary, Managing Committee

2003-2005

Facilitating the enthusiasms of the Australian Linux community; primary activity is to ensure the smooth running of the world renowned annual technical conference "linux.conf.au".

- Helping assure continuity, professionalism, and quality. Providing expertise in corporate governance and communications strategy, and have worked to cement alliances with other organizations.

Australian Unix, Linux, and Open Source Professionals' Organization

Member, Board of Directors

2003-2004

An association helping senior professionals involved in systems administration, software development, networking, and databases interact and further their professional development.

- Participating in renewing an organization, defining its goals, and helping to encourage members' volunteer efforts.

Selected Publications

Conference Papers

[“What would you do if you lost your office” - Disaster Recovery in Lower Manhattan, September 2001.](#) Lessons small organizations can learn about business continuity.

First presented at *Australian Unix, Linux and Open Source Professionals' Conference* in Sydney, Australia, September 2003. Most recently published in *Proceedings of the Information Security, Audit and Controls Association Oceania Conference*, Melbourne, Australia, October 2004.

[Surviving Change.](#) Understanding complexity in the IT world and increasing the professionalism of operations staff to deal with it.

Proceedings of the O'Reilly MySQL Database Users Conference, Santa Clara, USA, April 2005.

[Modern trends in Unix and Linux infrastructure management.](#) A survey of current practise, techniques used in large systems, and insight into future directions in the IT industry.

Proceedings of the Systems Administration Conference, Perth, Australia, September 2005. and presented as a featured invited speaker at Large Installation Systems Administration (LISA) Conference San Diego, USA, December 2005.

Magazine Articles

[New solutions for distributing data.](#)

Database Trends and Applications, March 2007

[A report from the frontier where Open Source and Java meet.](#)

“Barbarians at the Gate”, *Enterprise Open Source Magazine*, October 2006.

[Solving real world package management problems caused by newer versions of software.](#)

“Gentoo for all the Unusual Reasons”, *Linux Journal*, issue 130, February 2005.

[Extreme Systems Administration.](#)

O'Reilly *OnLamp* online magazine, April 2005.

Presentations

[Tales from the Dark Side of the Moon.](#) What it actually takes to successfully deploy and maintain Open Source software.

Presented at the Linux Bangalore conference, Bangalore, India, December 2004 and at Toronto Linux User's Group, Toronto, Canada, April 2005.

[Inside | Outside.](#) How the ability to participate helps end the digital divide.

Keynote speech to the Free and Open Source India conference, Bangalore, India, December 2005.

[Massive Changes and Upgrades to Mission Critical Systems.](#) Effective planning and documentation to mitigate risk in managing enterprise IT systems.

A tutorial presented at venues worldwide, most recently at the Large Installation Systems Administration (LISA) conference in San Diego, California, USA, December 2005.

[Scaling up.](#) Growing a vibrant community around a technology product.

Originally written as the opening keynote for db4objects, Inc's first annual users' and developers' conference, London, UK, July 2006. Variations on this theme have been used to in other presentations encouraging communities to actively facilitate participation by new contributors.

[Writing Really Rad GTK and GNOME Applications in C, Python, or Java.](#) A tutorial in the basics of graphical user interface development on Linux.

Originally written for the Australian Linux Technical Conference (linux.conf.au) Sydney, Australia, January 2007; co-presented with Davyd Madeley. Has formed the basis of numerous talks since. Presented again by popular request at Melbourne, Australia, January 2008.

[Usability, Usefulness, and Unit Tests.](#) Advanced topics in desktop UI development.

Presented at the Australian Linux Technical Conference (linux.conf.au) Hobart, Australia, January 2009

[“But what good is it, really?”](#) Perspectives on how Open Source will affect students' and their role in its future.

Keynote speech at Mukthi 4.07, M S Ramaiah Institute of Technology, Bangalore, India, April 2007.

Looking back up the river. Reflections on the relations between the people in upstream Open Source projects and those packaging software in downstream Linux distributions.

Originally written for the Gentoo Linux UK annual conference, London, UK, July 2007 and since presented at numerous venues.

Opening GTK to Java programmers. The past, present, and future of the java-gnome bindings project.

Presented at the GNOME Users and Developers European Conference (GUADEC) at Birmingham, United Kingdom, July 2007.

The Web Problem, and solving it in Haskell.

Invited talk at the Functional Programming Special Interest Group, Sydney, Australia, September 2012.

Shattering the Monolith.

Opening Keynote, Open Source Developers Conference, Sydney, Australia, December 2012.

Conflict-free Replicated Data Types, Consensus Algorithms, and the Cloud

Originally written as a lecture for the Functional Programming Special Interest Group, Sydney, Australia, June 2013.

If your server is a function, is your company a library?

Presented at the Commercial Users of Functional Programming (CUFP collocated ICFP) Gothenburg Sweden, September 2014

Build and deployment tools for taking Haskell applications into production

Lecture for the Functional Programming Special Interest Group, Sydney, Australia, November 2014.

Vaultaire: a data vault for system metrics, backed onto Ceph

Presented at the Australian Linux Technical Conference (linux.conf.au) Auckland, New Zealand, January 2015

Awards

A recipient of the Governor General's Bronze Medal (awarded to the student having the highest scholastic achievement in their high school graduating class) and won the Drill and Exercises prize, Second Year at RMC (awarded to the top officer cadet in his or her class). Earned a distinction on the Officer Professional Development and Field Operations exams. Earned Membership in the Canadian Aeronautics and Space Institute and the Australian Computer Society.

Interests

Scuba diving, trekking, and blue water sailing. Enjoy distance running and study the Japanese martial art Aikido. Read extensively on science, business, and international relations. An avid connoisseur of cappuccino, martinis, and world class DJs.