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Career Objectives

My interest and focus has been around developing novel fault-tolerant, distributed systems which scale both in operation and in future development. I have and seek to continue designing applications and services which integrate well at any scale from small to large.

My experience with software, hardware, electronics, networking from all angles - specification, design, implementation, maintenance and troubleshooting - make me an ideal candidate as part of a technical group with a mandate to deliver secure, efficient, flexible services in a realistic timeframe. My diverse skill-sets and interests give me novel insights into problem solving, debugging and troubleshooting across all disciplines.

I work well under pressure and strive to create solutions as clear as possible so I or another can easily adapt them to changing project requirements. I believe that it is possible to develop and administer secure, flexible, scaleable applications in a short timeframe.

Technical Skills

General Abilities

Technical Documentation; Software and hardware debugging; Software development, Data modeling; Testing procedure design, implementation and documentation; System design, implementation and maintenance, Network design, implementation and maintenance; Scaleable, fault-tolerant and distributed systems architecture and management; Resource forecasting; Peer review; Change management; Problem domain adaptability.

Programming Languages

C/C++; Java 1 and 2; Python; Perl; Shell scripting (C-shell, SH, BASH, some ZSH, SED/AWK); PHP 4.x and 5.x; various flavours of Assembler (Zx80, ia32, 680x0, AVR, MIPS, 6502/6510); HTML/CSS; Javascript; XML; some exposure to LISP/Scheme/Prolog; some exposure to legacy languages (PL/1, COBOL, Fortran)

Networking Technologies

Ethernet - 10/100/1000 megabit over FX/TX; 802.1q VLAN; 802.1x authentication; ATM (AAL5, ethernet/FR encapsulation, IP/PPP over ATM); DSx, OCx, HSSI, E1/E3/T1/T3; IP over Satellite, some exposure to SONET/WDM/TDM; wireless technologies (proprietary Nortel; standard 802.11-type technologies including Cisco Aironet); L2TP for ADSL/Dialin deployments; IP QoS/Diffserv, some exposure to Ethernet QoS; exposure to legacy LAN technologies (Bayan Vines, Novell IPX, etc); Routing Protocols in LAN, WAN, country and global internet networks (BGP4, OSPF, RIP1/RIP2, IS-IS); stateful and stateless IP firewalling.

Network Hardware

Cisco Switches (6500, 5500, 4500, 4000, 2950, 2960, 3550, 3560, 2924, 2948, etc) running IOS and CatOS; Cisco Routers (800, 1600, 2500, 2600, 2800, 36x0, 37xx, 4x00, 720x, 75xx, GSR 120xx), Juniper Routers

(M5, M40, M180), Juniper DX application switch, Alteon AceDirector, Lucent Firewall Brick, Nortel ATM Switches (Passport 7440/7480), Nortel Routers (Passport series), Nortel Shasta Broadband Services Delivery Platform.

Operating Systems

FreeBSD, Linux flavours (Debian, Ubuntu, Slackware, Redhat, Redhat FC, Redhat Enterprise), Digital Unix/Tru64, SGI IRIX 6.x, Xen Virtualisation (2.2, 3.0), VMWare (ESX, GSX, Desktop Viewer), Solaris 7/8/9 (administration and installation via Jumpstart, experience with DiskSuite), OS/2, MacOS/X, Windows XP/2000/2003 server.

I have extensive experience with Linux and FreeBSD as a systems administrator and application developer.

Server Hardware

I have had a very wide exposure to a very large set of UNIX and Windows hardware in the past ten years; this is not an exhaustive list.

Dell Poweredge servers, Compaq/HP Proliant servers, Sun Enterprise 220/420/250/450/3500 servers, A1000/D1000 attached storage, some exposure to EMC storage area network switches, storage and administration, SGI hardware (Challenge, Indy, Indigo 2, Onyx), Alpha hardware (from Alphastation 255 and Multia through to multi-CPU Alphaserver GS/ES)

UNIX/Windows Applications

I have had a very wide exposure to a vast number of internet applications and web application frameworks over the past ten years; this is not an exhaustive list.

SQL Databases (MySQL 3.x, 4.x, 5.x, PostgreSQL 7.x, various flavours of Microsoft SQL server, some exposure to Oracle); Apache 1.x/2.x; some specialised web services (httpd, boa, lighttpd); various DNS servers (djbdns, ISC Bind, Windows DNS services); various e-mail services (Postfix, Sendmail, Exim, Qmail, some experience with Microsoft Exchange), MySource CMS; Plone CMS; some exposure to Zope; some exposure to LDAP; RADIUS (Freeradius, Cistron Radius, etc); Cisco TACACS; Squid 1.x, 2.x, 3.0; exposure to Wiki services (MediaWiki as run by Wikipedia.org, MoinMoin); DNSZone; Tripwire; Various network/server response graphing applications (Cricket, Cactii, MRTG, Smokeping); Various network/server SLA-type monitoring (some experience with BMC products, some with Open Source products such as Nagios and Munin); Various backup software packages (amanda, abackup, bacula, ARCServe backup agent)

Development Environments

Visual C/C++; Visual Basic; some .Net exposure; various programming languages under FreeBSD/Linux/Solaris; some exposure to MacOS/X XCode.

Academic Skills

I am currently studying Psychology and Linguistics (second year) at the University of Western Australia, where work commitments permit. The completed units have covered a wide variety of useful skills, including understanding survey/questionnaire design and implementation, statistical analysis techniques and the design, execution and analysis of experiments including determining experimental validity and reliability.

I have completed a number of other units where time permits, including first year Mathematics and Computer Science units.

I have begun the process of acquiring industry certifications to test my knowledge against well-established benchmarks. I achieved the CCNA certificate in early January 2007 after approximately 4 weeks of study; I plan on completing the CCDA and CCNP in 2007.

Employment History

Network Engineer

Denver Technology (Perth) – October 2006 – Present

Skills: Cisco routing and bridging technologies; Virtualisation technologies (VMWare, Xen); some Linux/Solaris administration and software development

I was hired by Denver Technology to help grow their Network and Communications team. My main focus is supporting a wide variety of critical networks spanning state and international borders for a number of clients. My recent achievements include implementing monitoring and service/QoS management for one of Western Australia's largest mining companies; I was also part of a two-man team involved in the redesign and deployment of a VoIP-ready Cisco switched network core for an oil refinery south of Perth.

Systems/Network Administrator

The University of Western Australia (Perth) - October 2003 – October 2006

Skills: Cisco networking (ethernet, IP); Debian/Redhat server installation and maintenance; scripting and application development (SH, BASH, sed/awk, zsh, C, C++, PHP, Perl, Python), dns, apache-1.x, apache-2.x, squid-2.5, radiusd, tacacsd, imp/horde, rancid (cisco config management), Irrd, munin, smokeping, Nagios, Mysource, some Oracle DB interfacing, sendmail, postfix, qmail, exim, Xen, VMWare.

I was hired as a casual employee during my study semester to upgrade and manage the campus-wide Squid proxy service which provides an authenticated proxy service to university administration and student laboratories. My work then expanded to general system administration, network administration and management of small projects. I currently am responsible for over forty Linux servers spread across a number of physical and virtual (Xen/VMWare) services along with over thirty Cisco switches and routers across Western Australia.

My achievements to date include:

- Improved proxy cache performance (Squid running under Linux-2.6), dropping CPU usage by almost 95% and allowing the current proxy service to scale to fit the future needs of the university.
- The redesign of a number of departmental networks on campus to better integrate with the campus backbone/distribution network and allow more services to be available to end-users.
- The design, implementation and day-to-day maintenance of the University staff and student Webmail portal which services 20,000 students and 5,000 staff. This replaced an aging and unmaintained Horde/IMP installation with an up-to-date Horde/IMP install on a Linux-2.6 Debian platform across multiple servers in a distributed load-balanced and fault-tolerant configuration.
- Analysis of the 2006 UWA student handbook service (<http://handbooks.uwa.edu.au/>) which performed poorly during student re-enrollment times (serving pages at a rate of 1 every 5 seconds) - MySource core code, database restructuring and Linux-2.6 OS tuning along with the use of a modified Squid reverse proxy-cache dropped access times to sub-second levels. This allowed the University Publications and University Website groups to concentrate on the 2007 service rather than trying to maintain the 2006 site.
- Frequent testing and day-to-day care of the server backup regime including all student and staff email and almost a thousand University websites; spanning a terabyte of data in weekly full and nightly incremental backups
- Re-engineering of current network services to support increased security and network resilience. One notable example is an ongoing project to deploy IP Cameras in lecture theaters (currently numbering around 100 across 30 buildings); I am successfully coordinating the redeployment of existing cameras and the de-

ployment of new cameras into a secure framework with tightly controlled access, accountability and reporting.

- The deployment of network infrastructure in new campus locations throughout Western Australia.

Systems/Network Administrator

West Australia Networks (Perth) May 2003 - October 2003

Skills: Application development, Debian+Redhat Linux server installation and maintenance, ethernet/IP networking, advanced IP routing (BGP, OSPF), traffic shaping/management, QoS, L2TP (ADSL, Dialup), dns, apache-1.x, apache-2.x, squid-2.5, radiusd, AccSys ISP accounting database, rsync+tar backups, locally-written php4 web site hosting+CMS, nagios+mrtg monitoring, sendmail SMTP server

Employed initially to consolidate and review the security of existing Linux, Windows and network infrastructure systems, I quickly spearheaded a number of successful projects, including:

- Core networking infrastructure upgrades to support VoIP
- General software upgrades across all Linux servers
- General security auditing across all Linux servers; resulting in a combination of per-server tripwire, ipfilter rules and log summarizing to report suspicious activity
- Their initial Australia-wide ADSL offerings, using wholesale Layer 2 and Layer 3 ADSL bundles
- Their initial Wireless internet deployments to a number of businesses in the Metropolitan Perth area
- The design and implementation of a Netflow-based accounting system to account Layer 3 ADSL and Wireless internet; integrating into their existing Accounting package (AccSys)
- The introduction of basic workflow and email ticket tracking systems implemented using Request Tracker and some custom software

Network Engineer

Coretel (Perth) January 2003 - May 2003

Skills: ATM + IP networking, IP routing (OSPF, IS-IS, BGP, RIP), Wireless and fibre WAN, ~5 Linux (Debian) and 2 FreeBSD server administration, Nortel ATM+Wireless equipment, Cisco+Cabletron switches, named, radius, mrtg, cricket, traffacct, rsync+tar backups, tripwire

Coretel was a telecommunications provider based in Perth, specializing in Wireless Internet and Telephony. Their core business was bought by another company, Didasco, sometime in 2005.

I was responsible for the design and maintenance of their Wireless ATM network, spanning half a dozen points of presence in Western Australia. Their ATM network used Nortel Passport ATM switch/routers and the Shasta Broadband IP/ATM service router in the core. In addition, I was responsible for a number of Linux, FreeBSD and Novell servers implementing their shared e-mail, DNS, reporting and general services.

Systems Architect

IP Exchange (Sydney) July 2002 - December 2002

Skills: FreeBSD 4.x installation and administration, Cisco switches and routers, Bay Networks dialup servers, IP routing (OSPF, IS-IS, BGP), E1 and E3 circuits, PHP+Perl application development, Apache+PHP hosting, Postfix SMTP, rsync+tar backups, Squid-2.4, radius, PostgreSQL user/financial database, MySQL statistics database.

IP Exchange was an attempt to build an Australian-wide Virtual ISP, with dialup and ADSL deployments in each major city. The main business, Barekoala, was bought by Dodo Internet sometime in 2003.

I completed a number of tasks as the systems architect, including:

- Design and implementation of a virtual ISP accounting/management system, using PHP and PostgreSQL, controlling all aspects of the operation from online account creation, account management, credit card billing and various reporting;
- Design and implementation of transparent web proxy/caching, using a locally-modified Squid, to improve the user experience.
- Design and implementation of a pre-paid card management system - handling all aspects including card number assignment, reseller tracking and financial reporting.
- Design, implementation and improvements of ISP systems - including a distributed mailbox service and web hosting service.
- The maintenance of over thirty FreeBSD servers - including constant security audits and software upgrading.

Network Architect/Systems Programmer

InterXion (Amsterdam) March 2000 - September 2001

Skills: MPLS, IP routing (BGP, IS-IS, OSPF), ethernet switching LAN+WAN, wireless technology, FreeBSD kernel development, C/C++/Perl application development, Solaris 8+DiskSuite+Jumpstart server administration, FreeBSD server installation and administration, a small number of Linux servers, Alphaserver GS160 application development and system maintenance, Cisco routers+switches, Juniper routers, Extreme switches, OC1/OC3/OC12 Europe and North American IP+MPLS network, apache 1.x, named, radius, mysql, cricket+mrtg, locally developed route arbitration and network SLA monitoring software.

My work at InterXion followed the successful projects at Speedport and Versatel. I was initially hired to develop applications to manage a proposed European-wide "Internet Exchange" network, but soon moved into more of a network architect role.

Notable work included:

- Testing and development of MPLS and VLAN solutions, involving Juniper M40 routers and Extreme Black Diamond/Summit ethernet switches;
- The development of RPSL-driven BGP peering software (based on Zebra); to provide clients with separate BGP views depending on their registered peering arrangements
- Implementing and maintaining a European-wide network monitoring service, implementing SLA style monitoring for all InterXion POPs and providing live reports to clients and management
- Design, testing and deployment of Solaris 8 application hosting using Netra T1 rackmount servers; including Jumpstart-based hands-off installation with specific customisations available to clients to support their specific environments

Network/Web Cache Architect

Versatel Telecom (Amsterdam) April 1999 - March 2000

Skills: Solaris 7 administration, FreeBSD administration, Squid-2.3 and 2.4 development, apache, named, sendmail SMTP, qmail SMTP, HP Openview, Cisco routers/switches, Alteon Acedirector 3 loadbalance/failover switches, OC3 Europe and North American IP network, IP routing (OSPF, BGP, IS-IS, RIP), ethernet switching LAN/WAN/VLAN.

Speedport was bought by Versatel Telecom in the middle of 1999, giving Versatel an IP network throughout North America which was then integrated into their European-wide Telecommunications network. I was one of the Network Architects involved in their initial wide-scale IP deployment throughout Europe, including the continued development of forward and reverse proxy/cache technologies. Versatel inherited the Speedport cache and IP network, doubling the number of servers within three months.

Network/Web Cache Architect

Speedport (Amsterdam) December 1998 - April 1999

Skills: Solaris 7 administration, FreeBSD administration, Squid-2.3 and 2.4 development, apache, named, sendmail SMTP, qmail SMTP, HP Openview, Cisco routers/switches, Alteon Acedirector 3 loadbalance/failover switches, OC3 Europe and North American IP network, IP routing (OSPF, BGP, IS-IS, RIP), ethernet switching LAN/WAN/VLAN.

I was initially brought to Amsterdam to continue my Squid development and integrate Web proxies into the Speedport Europe and North American network. I successfully built transparent web cache clusters in a variety of European and North American locations, eventually beginning work towards reverse proxying to improve performance of client web sites. I was responsible for maintaining over twenty Solaris 7 servers running a local copy of Squid-2.4, several Alteon Acedirector switches to implement failover/load balancing, a handful of FreeBSD 4.x servers (DNS, SMTP, NNTP, Graphing) and was partly responsible for their Europe/North American network.

Customer Support

iiNet Technologies (Perth) October - December 1998

Skills: Customer Support, Linux application development (Perl.)

I began at iiNet as a customer support officer and quickly moved into an entry-level programmer role, developing in-house applications to support and co-ordinate dialup client software installations across Perth.

Programmer

Computronics (Perth) Jun - October 1998

Skills: Visual C, Visual Basic, Z180 development, basic electronics, GPS software implementation (C), some SCO Unix exposure.

Computronics develop a series of electronic LED signs - both text and video - along with GPS-based survey and farming equipment. I was responsible for the development of some GPS software running on embedded hardware, some Z180 assembler programming for a RGB LED sign and developed management software used by a number of Australian Cinemas to display up-to-date movie screening times. Software was developed under Windows 95/98 on a combination of Visual C and Visual Basic.

Network/Systems Administrator

Ourworld Global Network (Sydney) 1997-1998

Skills: FreeBSD+Linux administration, C/Perl development, IP routing (BGP, OSPF, IS-IS), IP over Satellite, Cisco routing/switching, MySQL.

Initially hired as a UNIX Systems Administrator, I quickly moved into a joint role and assisted in the development, deployment and testing of one of Australia's first commercial Satellite IP rollouts. The OGN network included a 45mbit service via Pan-Am Sat, delivering bandwidth from California to Melbourne, Sydney and Cairns. In addition, I developed a number of technologies to improve web browsing and general TCP response, utilizing a smaller terrestrial link to prioritize bulk traffic versus latency-critical traffic, giving the performance of a terrestrial link with the available throughput of a satellite service.

Customer Support/Systems Administrator

PSINet (Perth) 1995-1997, 1997-1998

Skills: Customer support, Linux administration, Cisco routing, IP routing (BGP, OSPF), Stallion multi-port serial hardware, Netcomm modem racks.

I spent a number of months as a ISP customer service representative before moving into a junior Systems Administrator role. My duties involved the management of a number of Slackware and early Redhat Linux servers and the dial-in infrastructure for almost a thousand users throughout Perth.

Other Work

I am a current and past contributor to many open source projects with a focus on network and disk storage areas. My current work is with the Squid Web Proxy/Cache software which has resulted in network throughput improvements many-fold over previous releases. I have recently implemented a number of important performance improvements in the Squid proxy server – most notably disk throughput improvements by bringing COSS, a cyclic-based filesystem, into production quality – and I continue to develop web cache and transparent traffic interception software in my spare time.

I am an volunteer game developer on Lusternia (<http://www.lusternia.com>) - a young online text-based multi user game. This MUD is implemented using Rapture, a proprietary C-like language and runtime environment. I am currently focused on finding and fixing software and game logic bugs and am moving towards code generalization and other changes to help code scalability.

I have presented at a number of conferences and venues - including NANOG (North American Network Operators Group), SAGE-AU, The University of Western Australia, Oxford University (Computer Science interest club) and Manchester University. Most of these talks are available at <http://www.squid-cache.org/~adrian/>.

I worked for one of the early Western Australia Internet Exchange peering point (WAIX) and was instrumental in the deployment and management of both their first route server and testing connecting the Western Australia and South Australia internet exchanges through an experimental transit connection.

I also provide some guidance on software design, network design and systems implementations to various groups at the University of Western Australia, outside of the scope of my current employment.

References

Available on request.