NEDA
Communications, Inc.

Serving the Internet community
since 1991

Mohsen Banan

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Software Development And Internet Engineeing Resume
Other Resume Forms And Formats: HTML || Multi-Disciplinary || Academic || CV en français

Expertise: Unix || Protocols || Embedded & IoT || Messaging || Web Development || Cloud & Virtualization || Security

Summary

Over 20 years of software, internet and wireless engineering experience spanning software architecture, design, coding, data communications, wireless protocols and software project management.

Extensive hands-on team management experience in both Systems Administration and Software Engineering project environments, including development of procedures, policies, technical manuals, software guides and instructions, executive briefings, and presentations.

Technical Background

Software Development – Languages. Continually active through the past 20 years, in a coding, designer & architecture capacity. Have maintained vertical continuity in software development process.
- Expert in Python, C, C++, Bash/ksh/sh, Lisp, Scheme, TeX.
- Fundamental mastery of JavaScript, node.js, html, xml, css.
- Basic scripting and applications development skills in Perl, PHP, Ruby, R and Java.

Project Management & Methodologies. Have managed medium size (10 to 15 person) teams of software engineers and testers through the full systems developement life-cycle. Depending on specifics of project, team and environment; have made effective use of eXtremeProgramming, Design Patterns, Refactoring, Agile and Scrum methodologies. A strong proponent of development and operations continuity (DevOps), Continuous Integration (CI) tools (Jenkins) and full revision control integration (Git).

Systems Administration and Operations. Webmaster, hostmaster and postmaster of more than a dozen networks for over ten years. Managed complex Layer 3 routing and security for mid-size networks. Managed ISP and ASP services for private and public user communities. Experience with configuration management tools similar to Puppet, Ansible, Chef, and Cfengine.

Platforms. Proficient with all major varieties of Unix (20+ years) including: Solaris (7+ years), Linux (10+ years; Debian, Ubuntu, Red Hat) and embedded Linux (ARM and OMAP) common platforms (Raspberry Pi, BeagleBone, DreamPlug).

Virtualization. Basic familiarity and hands-on experience with most virtualization technologies (KVM, Xen, VMware, VirtualBox). Substantial experience with libvirt/virsh/kvm. Familiar with OpenStack and Software Defined Networks (SDN).

Protocol Design and Implementation. Architected and designed two published Internet RFCs (RFC-2188 and RFC-2524). Verified completeness and correctness of RFC-2188 and RFC-2524 protocols based on my portable reference implementation. Licensed the reference implementation to AT&T and Sema Group UK. Have played a role in the development and publication of several protocols through various standards organizations.

Data Communications. Expert level understanding of Layers 2 through 7. Extensive experience with SMTP, IMAP, POP, DNS, LDAP, HTTP, HTML, XML, PGP, S/MIME, X.509, X.500, ASN.1, CMIP, NETCONF, SNMP, RPC, MQTT, ESRO, TCP, T-TCP, IPv4, IPv6, Mobile-IP, IP-SEC, 802.1, 802.2, etc.

Telecommunications. Extensive experience with SS7, TCAP, SCCP, OMAP, IS-136, IS-41, ISDN, Telephony/POTS, VoIP.

The Mobile and Wireless Domain. One of the original and principal architects of the CDPD Specifications. Authored numerous wireless-related books, articles and technical papers. Extensive experience with wide-area wireless technology and protocols including: CDPD, WiMAX (802.16), GPRS, GSM, EDGE, 3GPP, LTE, UMTS, SMS, CDMA, TDMA, AMPS. Hands-on development experience with Wi-Fi (802.11), Bluetooth, ZigBee (802.15). World class expertise in efficient middle-ware protocols for M2M, IoT/IoE.

Open-Source Software. A proponent of Free and Open-Source Software (FOSS). Extensive experience with: qmail, mailfront, Sendmail, Courier, SpamAssassin, ezmlm, SANE, Gimp, BIND, djbdns, daemontools, ucspi, Puppet, Chef, Ansible, Salt, Apache HTTP server, Ajax, JASON, Zope, Plone, Turbine, Tomcat, Jetspeed, Velocity, PostgreSQL, MySQL, Hibernate, Torque, Asterisk, Samba, CUPS, LaTeX, Emacs, bidi.

Security. Extensive experience with firewalls (iptables, Shorewall, Ferm), IP-SEC, TLS/SSL, PGP & gpg, S/MIME, PKCS, X.509, DNSSEC, tripwire, snort.

Multilingualization (m17n). Primary author of Emacs Persian/Farsi language facilities, including Persian Input Methods. Maintainer of persoarabic.org. Participant in efforts to make various open source software bidirectional (bidi aware).

Teaching. Occasionally, I teach. The subjects that I teach are typically: Messaging Systems, Wireless Protocols and Unix Systems Administration. My students are usually seniors or graduate students. I have been an instructor or a guest lecturer at University of Washington, Seattle University and Bellevue College. For additional information see: `http://mohsen.1.banan.byname.net/teaching`.

Experience

Neda Communications, Inc. — Bellevue, WA
Consultant, — 1991–present

Provided consulting and/or contract engineering services for numerous clients and projects. Satisfied clients include: T-Mobile, Sierra Wireless, AT&T Wireless Data Division, CDPD Forum, Seattle Specialty Insurance, Electronic Mail Association, Emulex, Motorola, Microsoft, Precor, Research In Motion and US Department of Justice.

Notable assignment and projects include:

- Designed and developed MARMEE (Multi-Account Resident Mail Exchange Environment) to facilitate mass email distribution with high delivery-reliability and tracking capabilities similar to ConstantContact. MARMEE makes extensive use of offlineimap, notmuch and flufl.bounce. [2017-2018 — Client: McKenzie Chase] — Open Source Package: pip install unisos.marme

- Architected and developed GOSSONOT (Generalized Open-Source Self-Organizing Network Of Things) platform for integration of modules oriented managers for OSSes, clusters of Linux-KVMs and Internet-Of-Things (IOT). Implemented manager adapters for NETCONF, SNMP, MQTT and ESRO (Python 3.6). Customized client adapters in Raspberry Pi based embedded resource-constrained real-time environments. [2017-2018 — Client: confidential] — Open

Source Package: pip install bisos.gossonot

- Mentored and directed a team of 8 engineers to build SON (Self-Organizing Network) systems management modules for T-Mobile's RAN (LTE, UMTS, GSM) multi-vendor (Nokia, Ericsson) network based on Nokia's EdenNet platform in Python 2.7. Created needed software developement infrastructure (IDEs, Git, libraries) from ground up. Extended the EdenNet Platform beyond RAN objects with a parallel platform based on RabbitMQ, Celery and Flower in a Django environment. Collaborated with RAN engineers to optimize algorithms typically based on KPIs monitoring to adjust CM parameters. Interfaced with the Big Data (Hadoop) infrastructure to provide input for machine learning capabilities. [2013-2016 — Client: T-Mobile]
- Maintained a medium size boutique data center (LibreCenter) and provided co-location, hosting, web site developement and disaster recovery services. Customized web services at LibreCenter are primarily Plone, Zope and Python based large scale autonomous Content Management System platforms operating in the context of REST in Service-Oriented Architecture (SOA) model. Integrated various sophisticated JavaScript, JASON, Ajax based capabilities (e.g. Galleria) into Plone as ByStar features. Developed adaptations of these web services for parallel optimum behavior both in mobile devices and desktop environments. E-commerce services at LibreCenter are based on the Interchange platform. Worked with LibreCenter B2C clients to incorporate their end-customer's requirements into our open-source platform. [2004-Present]
- Added capabilities for safe booting and remote software upgrade process of Precor's embedded Linux based exercise equipment. The work involved Linux kernel module configuration and modifications, initramfs scripting and other low level customizations to the ARM and OMAP based embedded Linux system. Tools used for this project included: Gnu Cross Compilers toolchain, GDB, Jtag, Pandaboard. [2011-2012 — Client: Precor]
- Provided prior art determination and expert witness services in the defense against a number of patent assertion claims. [2005-2012 — Clients: Research In Motion, Seven, Howrey, Winston & Straw]
- Assisted the Technical Committee and the Department of Justice in monitoring Microsoft technical compliance with the Final Judgement. Advocated use of the model of Protocol Implementation Conformance Statement (PICS) Proforma as a verification method. [2006]
- Provided liaison and advocacy for client interactions with several standards organizations. Particpated in activities of various working groups of TIA, ANSI and IETF/IESG/IAB. Published two internet protocols which were developed entirely outside of IETF as RFCs. [1994-Present]
- Managed a team of 4 software developers to design and implement a medium scale Document Management System (DMS) for Seattle Specialty Insurance. Integrated eFax, scanners and OCR with legacy databases. Provided off site hot standby disaster recovery services. The Java based portal technologies that were used to build this highly customized system included: Jetspeed, JBoss, Tomcat, Hibernate and PostgreSQL. [2003-2007 — Client: Seattle Specialty Insurance]
- Built a complete state-of-the-art Data Center from the ground up, including redundant stable power and backup generator and redundant Internet connections. The infrastructure of this Libre Data Center is based on 100% open-source and free software. [2000-2003]
- Designed a set of highly efficient protocols for use in narrowband wireless environments. Published the protocols as RFC-2188 and RFC-2524. Managed a team of 12 software engineers for implementation of these protocols in the context of a large scale message center which integrated SMS, email (imap, pop, smtp) and webmail for wireless environments. Coded some of the more critical components myself. These services have since evolved into ByStar's Libre Texting services. [1995-2002 — Clients: McCaw, AT&T Messaging Division]

- Managed a team of 3 software engineers in porting several Sierra Wireless protocol stacks to new embedded hardware platforms. [1998-1999]
- Performed technical due diligence and offered technology opinions for mergers and acquisitions and technology investments. [1994-1997 — Clients: McCaw, AT&T Wireless]
- Played a key role in the creation of the Cellular Digital Packet Data (CDPD) industry. Led the technical network architecture design for the CDPD specifications, and was directly involved in the planning, development and deployment of the network services for AT&T Wireless Services. Co-authored the monograph Internetwork Mobility – The CDPD Approach book published in 1996 by Prentice-Hall. [1992-1996 — Clients: McCaw, CDPD Forum, AT&T]

Teknekron Communication Systems Bellevue, WA
Systems Architect & Project Manager, 1990–1991
Managed the architectural design and implementation of medium-scale Network Management systems of SS7 networks using SNMP and CMIP.

Boeing Computer Services Bellevue, WA
Systems Architect, 1989–1990
Responsible for standards tracking and strategic planning of Directory Services (X.500) in Boeing office. Chairman of North American MAP/TOP Directory Services Technical Committee. Represented Boeing in NIST-OIW and ANSI OSI standards committees.

Interconnections Bellevue, WA
Project Engineer, 1988–1989
Designed and implemented the network layer of XNS for Novell Netware VMS. Ported software to SCO Unix as a Kernel Streams Module.

Retix Santa Monica, CA
Project Engineer, 1986–1988
One of the original seven software engineers who developed the core technology for Retix. Lower layer work was focused on Transport Class 4, IP, LLC1 and 802.3 drivers. Upper layer work was focused on X.400. Ported Retix's lower layer software to various hardware platforms and operating systems. Retix had a successful IPO in 1992.

Teltone Corporation Seattle, WA
Software Engineer, 1983–1985
Developed a local telephone call billing system for step-by-step and cross-bar central offices, in C, for custom embedded Teltone hardware. Worked closely with hardware engineers to ensure correct system functionality.

Education

University of Washington Seattle, WA
M.S. in Electrical Engineering, 1981–1982
Specialization in Digital Systems and Computer Engineering

Seattle University Seattle, WA
B.S. in Electrical Engineering, 1978–1981
Graduated Magna Cum Laude

Publicly Available Software

The following is a sample listing of software I have developed. Pointers for obtaining the software and a more complete list is available at:
http://mohsen.1.banan.byname.net/software.

Language	Description	Obtaining	Documentation
Python	**ICM**: Interactive Commands Module	pip install unisos.icm	PLPC-180050
Python	**BISOS**: ByStar Internet Services Operating System	pip install bisos.common	PLPC-180047
Python	**GOSSONOT**: Generalized Open-Source Self Organizing Network Of Things	pip install bisos.gossonot	PLPC-180052
Python	**MARMEE**: Multi-Account Resident Mail Exchange Environment	pip install unisos.marme	PLPC-180051
Bash	**BISOS Bootstrap**: Bash scripts (ICMs) for bootstrapping BISOS	pip install bisos.bootstrap	PLPC-180047
Lisp	**Persian Input Methods**: Emacs's Farsi Transliteration Keyboard	Part Of Emacs 24+ Distros	PLPC-120036
Lisp	**Blee-ICM-Player**: An Emacs Interface For Running ICMs on Command Line	pip install blee.icmPlayer	PLPC-180050
C	**OCP**: Open C Platform – For Portable Embedded Protocols and Apps	Compressed Tar Format	PLPC-110301
C	**ESRO**: Invoker and Performer API for Implemetations Of RFC-2188	Compressed Tar Format	PLPC-110303
C	**EMSD**: Server and Client Implemetations Of RFC-2524	Compressed Tar Format	PLPC-110304

All the following software is licensed under the GPL, LGPL or AGPL, and is freely available at the indicated URLs.

Publications

The following is a sample list of publications. A more complete list is available at: mohsen.1.banan.byname.net/publications.

1. M. Banan, J. Cheng, and M. Taylor. *AT&T/Neda's Efficient Short Remote Operations (ESRO) Protocol Specification Version 1.2.* Request for Comments (Informational) 2188. Neda Communications, Inc., September 1997. Available at https://www.rfc-editor.org/rfc/rfc2188.txt.
2. Banan, M. *Neda's Efficient Mail Submission and Delivery (EMSD) Protocol Specification Version 1.3.* Request for Comments (Informational) 2524. Neda Communications, Inc., February 1999. Available at https://www.rfc-editor.org/rfc/rfc2524.txt.
3. Mark S. Taylor, William Waung, and Mohsen Banan. *Internetwork Mobility: The CDPD Approach.* Prentice Hall, Inc., New Jersey, 1997. ISBN 0–13–209693–5. Available at http://mohsen.1.banan.byname.net/PLPC/120021.
4. Mohsen Banan and Andrew Hammoude. *Libre Services: A non-proprietary model for delivery of Internet services.* Free Protocols Foundation, Bellevue, WA, 2007. Available at http://www.freeprotocols.org/PLPC/100101.
5. Mohsen Banan and Andrew Hammoude. *Neda's Open Business Plan.* Neda Communications, Inc., Bellevue, WA, 2013. Available at http://www.neda.com/PLPC/180014.
6. Mohsen Banan. *The Libre-Halaal ByStar Digital Ecosystem – A Unified and Non-Proprietary Model For Autonomous Internet Services.* Neda Communications, Inc., Bellevue, WA, 2008. Available at http://www.neda.com/PLPC/180016.
7. Mohsen Banan and Andrew Hammoude. *Operation WhiteBerry.* Free Protocols Foundation, Bellevue, WA, January, 2000. Available at http://www.freeprotocols.org/PLPC/100006.
8. Mohsen Banan and Andrew Hammoude. *The WAP Trap: An Exposé of the Wireless Application Protocol* (French title *Le WAP à la trappe: Un exposé sur le Wireless Application Protocol*). Free Protocols Foundation, Bellevue, WA, January, 2000. Available at;

http://www.freeprotocols.org/PLPC/100014.
French version available at:
http://www.freeprotocols.org/PLPC/100015.

9. Mohsen Banan and Andrew Hammoude. *Free Protocols Foundation Policies and Procedures*. Free Protocols Foundation, Bellevue, WA, January, 2000. Available at http://www.freeprotocols.org/PLPC/100201.
10. Mohsen Banan. *Lightweight & Efficient Application Protocol (LEAP) Manifesto*. LEAP Forum, Bellevue, WA, January, 2000. Available at http://www.freeprotocols.org/PLPC/100012.
11. Banan et al. *Open C Platform*. Neda Communications, Inc., Bellevue, WA, October, 1996. http://www.neda.com/PLPC/110301.
12. Mohsen Banan. *Computer Telephone Interface*. Master of Science in Electrical Engineering Thesis. University of Washington, August, 1982. Available at http://mohsen.1.banan.byname.net/PLPC/120002.

Languages

French. Fluent. http://mohsen.1.banan.byname.net/french.

Farsi/Persian فارسی. Mother tongue. http://mohsen.1.banan.byname.net/persian.

English. http://mohsen.1.banan.byname.net.

Resume Revision

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