

CURRICULUM VITAE

CONTACT INFORMATION

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OBJECTIVE

A systems researcher position, working on challenging research problems at the intersection of operating systems, virtual machines, and computer architecture.

EMPLOYMENT HISTORY

2003 — Current *Researcher and Master Inventor—IBM Haifa Research Lab, Israel.*

As a researcher in HRL's Systems department, I conducted research at the intersection of operating systems, hypervisors and computer architecture. I conceived, researched, designed and implemented systems. For example, I:

- Researched, designed, implemented, and optimized operating system (Linux) and hypervisor (Xen) support for IBM's Calgary PCI-X and CallIOC2 PCI-e IOMMUs on the x86-64 platform [iommu06].
- Led a team of researchers working in the areas of I/O for virtualized systems (e.g., evaluating IOMMU performance [iommu07]) and core hypervisor technologies.
- Designed and implemented embedded firmware for the "IP Only Server" [iponly06], a server which had only a CPU, memory and a network connection but could run standard, unmodified x86 operating systems such as Linux and Windows.
- Worked on a flexible architecture for TCP acceleration [tcpaccele06], on machine learning for monitoring [vigilant08] and storage for checkpointing [cdpvm08] virtual machines, and on operating system support for programmable devices [hydra08].
- Developed a proof-of-concept network driver for an experimental high-speed ethernet adapter, and embedded software for the IBM DS6000 storage controller.

2002 *Linux kernel Engineer - Qlusters, Inc., Tel Aviv, Israel.*

As part of Qlusters' core kernel team I developed and maintained the core OS components of Qlusters' single system image Linux based cluster OS. I kept the code in sync with the latest Linux kernel versions, fixed bugs, and developed new features such as distributed shared memory for Qlusters OS.

2000 — 2001 *Programmer and Systems Analyst—Pointer Software Systems, Israel.*

As a member of Pointer's team of consultants, I was responsible for designing and implementing creative solutions to customers' problems. For example, I designed and implemented an object serialization framework, an embedded database component for a large C++ application, and a cross platform library for communicating with GSM modems.

1997 — 2000 *Programmer and Programming Team Leader—IDF, Intelligence Corps.*

I was a programmer and programming team leader in the IDF's Intelligence corps computer unit. I designed and implemented several projects dealing with parsing, understanding and representing large amounts of data.

SKILLS SUMMARY

- Operating Systems:** Excellent knowledge of the Linux kernel, system libraries and software. Core Linux developer. Familiarity with several other operating systems and hypervisors.
- Programming:** Excellent knowledge of C. Varying levels of proficiency in C++, Java, Perl, Python, ML, Pascal, Object Pascal, Lisp, shells, x86 and PPC asm.
- SW Engineering:** Well versed in all aspects of the software engineering process, including research, analysis, design, review, development, QA and verification.
- Management:** Experienced in technical management of small groups of developers and managing geographically distributed software projects.
- Communication:** Excellent oral and written communication skills, teaching and training experience. Frequent lecturer on technical subjects.

SELECTED PUBLICATIONS

[hydra08]: Tapping into the Fountain of CPUs—On Operating Systems Support for Programmable Devices

Weinsberg Y., Dolev D., Anker T., Ben-Yehuda M., and Wyckoff P. In ASPLOS '08: Thirteenth international conference on Architectural Support for Programming Languages and Operating Systems.

[vigilant08]: Vigilant—Out-of-band Detection of Failures in Virtual Machines

Pelleg D., Ben-Yehuda M., Harper R., Spainhower L., and Adeshiyan T. In ACM SIGOPS Operating Systems Review, 42(1): 26-31 (2008).

[cdpvm08]: Virtual Machine Time Travel Using Continuous Data Protection and Checkpointing

Ta-Shma P., Laden G., Ben-Yehuda M., and Factor M. In ACM SIGOPS Operating Systems Review, 42(1): 127-134 (2008).

[osr08]: Open Source as a Foundation for Systems Research

Ben-Yehuda M. and Van Hensbergen E. In ACM SIGOPS Operating Systems Review, 42(1): 2-4 (2008).

[iommu07]: The Price of Safety: Evaluating IOMMU Performance

Ben-Yehuda M., Xenidis J., Mostrows M., Rister K., Bruemmer A., Van Doorn L.. In Proceedings of The 2007 Ottawa Linux Symposium (OLS '07), p. 9-20.

[iponly06]: IP Only Server

Ben-Yehuda M., Goldshmidt O., Kolodner E. K., Machulsky Z., Makhervaks V., Satran J., Segal M., Shalev L., Shimony I.. In Proceedings of the 2006 USENIX Systems Practice and Experience Track (USENIX '06), p. 381-386.

[iommu06]: Utilizing IOMMUs for Virtualization in Linux and Xen

Ben-Yehuda M., Mason J., Krieger O., Xenidis J., Van Doorn L., Mallick A., Nakajima J., Wahlig E.. In Proceedings of the 2006 Ottawa Linux Symposium (OLS '06), p. 71-86.

[tcpacce106]: Loosely Coupled TCP Acceleration Architecture

Shalev L., Makhervaks V., Machulsky Z., Biran G., Satran J., Ben-Yehuda M., Shimony I.. In Proceedings of the 14th IEEE Symposium on High-Performance Interconnects (HOTI '06), p. 3-8.

[Patents]: Various patent disclosures

Author of 15 patent disclosures which have been submitted for filing to the USPTO. Full list is available upon request.

PROFESSIONAL SERVICE

PC and General Co-Chair: SYSTOR '07 virtualization workshop
PC and General Co-Chair: WIOV '08, First Workshop on I/O Virtualization
Journal guest editor: ACM SIGOPS Operating Systems Review, special issue on Research and Developments in the Linux kernel.
Publicity Chair: SYSTOR '09.
PC Member: SYSTOR '07, Xen Summit '08, WIOV '08, SYSTOR '09
Member: USENIX, ACM SIGOPS, EuroSys.

FREE SOFTWARE

Linux Kernel <http://www.mulix.org/kernel.html>

I am an active Linux kernel developer. I maintain the Calgary IOMMU and trident sound driver. I also contribute to other areas of the kernel.

KVM Hypervisor <http://kvm.qumranet.com/kvmwiki>

I am an active KVM hypervisor developer. I am working on IOMMU support for KVM, and also contribute to other areas of the hypervisor.

Xen Hypervisor <http://www.cl.cam.ac.uk/research/srg/netos/xen/>

I developed IOMMU support for Xen, and also contributed to other areas of the hypervisor.

syscalltrack <http://syscalltrack.sf.net>

I co-founded the syscalltrack project, led it and was its most active developer. syscalltrack is a Linux kernel 2.4 based tool for debugging and monitoring a Linux system. I designed and implemented large parts of the kernel modules, the configuration and control utilities, the libraries and the testing framework.

ADSL/pptp <http://www.mulix.org/adsl.html>

I reverse-engineered the pptp protocol and wrote patches to the pptp client to allow Linux users in Israel to connect to Bezeq's ADSL service.

Various <http://www.mulix.org/code.html>

I contributed patches to numerous other free software projects, some of which appear on <http://www.mulix.org/code.html>.

EDUCATION

Partial studies in Computer Science in the Technion and the Open University, Haifa, Israel.

LANGUAGES

Fluent in Hebrew and English.

REFERENCES

Available upon request.