

# Melvin Walls

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**Overview** I'm a mid-career software engineer with broad interests in computer systems. I particularly enjoy building software to solve problems in domains I haven't engaged with before.

## Experience **Oil Shell** (<https://oilshell.org>)

*Contributor. Oct. 2022 - Present*

Implemented trap handling, job control, and interactivity for a new POSIX- and bash- compatible Unix shell. Optimized runtime libraries to dramatically speed up many workloads.

Extended a Python-to-C++ translator, parser, and garbage collected runtime to support growth of a new shell language.

*Technologies Used:* C, C++, Python

## **Nefeli Networks**

*Founding/Staff Engineer. Oct. 2016 - June 2023*

Designed and implemented core components of an NFV orchestration system and high performance userspace datapath for virtualized Telecom infrastructure. Also served as a maintainer of the Berkeley Extensible Software Switch project (<https://github.com/NetSys/bess>).

Owned the design and implementation of a high-performance site-to-site VPN appliance to replace public cloud VPN gateways (e.g. AWS Virtual Private Gateway, Azure Virtual Network Gateway) as part of a cloud networking orchestration product.

*Technologies Used:* C++, Go, Python; Linux KVM, DPDK, Qemu

## **NetSys Lab, UC Berkeley**

*Research Assistant. May 2015 - Oct. 2016*

Helped build and evaluate prototypes of network functions virtualization and container orchestration systems.

*Technologies Used:* C, Rust, Go, Python; Linux KVM, DPDK, Qemu

- Publications E. J. Jackson, **Walls, M.**, A. Panda, J. Pettit, B. Pfaff, J. Rajahalme, T. Koponen, and S. Shenker. SoftFlow: A middlebox architecture for open vSwitch. In *USENIX ATC '16*
- A. Panda, S. Han, K. Jang, **Walls, M.**, S. Ratnasamy, and S. Shenker. NetBricks: Taking the v out of NFV. In *USENIX OSDI '16*
- Z. A. Qazi, **Walls, M.**, A. Panda, V. Sekar, S. Ratnasamy, and S. Shenker. A high performance packet core for next generation cellular networks. In *ACM SIGCOMM 2017*
- A. Tootoonchian, A. Panda, C. Lan, **Walls, M.**, K. Argyraki, S. Ratnasamy, and S. Shenker. ResQ: Enabling SLOs in network function virtualization. In *USENIX NSDI 18*
- References Available upon request