

Eva Winterschön

Principal Systems Architect & Infrastructure Engineer

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{ a necessarily complex collection of neurons, causally linked into a consistently curious and creative cognitive mindscape }

- **Scale:** design, deploy, and iterate highly performant distributed systems and networks at global scale
- **Resilience:** 5-9s high-availability through clustering, sharding, and federation, with N+2 redundancy
- **Infrastructure:** 20+ years of global deployments, from baremetal on-premise to private and hybrid clouds
- **Foundations:** extensive engineering for compute, data, storage, caching, queuing, hpc + machine learning

Positions of Present & Past (22+ years)

Fastly – Global CDN & Edge Compute (7 years)

Principal Systems Architect, Performance + Hardware Engineering [2020-Present]

Senior Platform Architect, Performance + Efficiency Engineering [2019-2020]

Senior Hardware Systems Architect, Infrastructure Engineering [2017-2019]

- Design and management of Fastly's "Hardware Research Labs", scaled ~50 metal nodes to >250
- Architect for the "Kernel Performance + Efficiency" team, coordinating test development & automation
- Lead engineering efforts for "Edge Compute & Edge Delivery" during test development + integrations
- PoC for "Cache Node TLS Acceleration with Intel QAT", proven for 2x RPS on production cache fleet
- PoC for "200Gbit/s DDoS Simulation & Mitigation", hardware platform with DPDK + SmartNICs
- Performance engineering on fiber optics qualification + stability validation, 10/25/100G SR/LR/DAC/AOC
- Architect for pre-production Load-Test automation platform (full-stack engineering including hardware)

- Architect for Performance Engineering team's "OpenStack IaaS Infrastructure"
 - HCI Control-Plane and Ceph storage deployed on 24x baremetal: 3,072 cores, 24TB RAM, 1.2PB NVMe
 - 400Gbit/sec per HCI node (4x 100 Mellanox ConnectX) + Arista 7500 series switches
 - N+2 Control Plane with triple-parity rack-level failover domains

- Contributing member @ "Architecture Review Board" & "Edge Performance Review Board"
- Create architectural solutions for Hyperscaler industry partners, OEM hardware integrators
- Function as SME Architect for "all things CDN" during Managed CDN customer engagements
- Evaluate advanced networking components: Accelerators, Cryptographic Offload, DPU, SmartNIC, FPGA
- Collaborate with OEM/ODM engineering teams to evaluate, test, and benchmark all next-gen hardware components
- Maintain performance metrics for fleet components (ssd, nvme, sas3, hba, nvdim, cpu, ram, power, bmd, etc)
- Simulation modeling and predictive cost analysis for 2nd + 3rd order impacts of new hardware on global fleet performance

- Aforementioned projects contributed to the performance & scalability of Fastly's Global CDN
 - 16x increase in network throughput @ 256 Tbit/sec (Q2-2023)
 - 6x cache server increase with 5x scaled global POP locations (Q2-2023)
 - Serving 1.4 trillion daily requests @ 92% CHR (cache hit ratio) (Q2-2023)
 - Achieve sub-millisecond 99th percentile TTFB + TTFP metrics (Q2-2023)
 - Notable clients: AWS, Azure, GCP, Twitter, NFL, Spotify, Sony, Disney, Apple (Private Relay)

CMPLX.io – An Angel Venture (2 years)

Co-Founder + Lead Architect [2015-2017]

- Architectural design and automation for 'High Performance OLTP Database Virtualization'
- Application of HPC engineering methodologies for On-Premise Private Clouds
- Engaged as angel investor for seed-capital, building on prior startup experience
- System hardware and intellectual property acquired by private equity firm

Sonstiges-Verschiedene Consulting (5 years)

Senior Technical Architect & Sys/Infra Engineer [2008-2015]

- Systems, network, and data architecture consultant roles focused on disparate technology sectors
- Contract sectors: eCommerce, Colo/Datacenter, Healthcare, B2B, InfoSec, IXC, SaaS, Search
- Infrastructure optimization and compliance auditing for PCI-DSS + SOX
- Network design & deployment for wireless-backhaul in "service defiant tropical-zones"

Ancient/Evaporated Internet Startups (9 years)

Sr Systems + Database Engineer [2005-2010]

L2 Systems + Datacenter Engineer [2005-2005]

L1-L2 Systems - Technical Lead [2001-2004]

Hardware, Software, Wetware

- **Linux Hypervisors + Containers:** KVM, Libvirt, Qemu, Xen, OpenStack, Kubernetes, Podman, Kata, Docker
- **FreeBSD Hypervisors + Containers:** Bhyve, Xen, Libvirt, Qemu, Podman, AppJail, Bastille, CBSD, System Jails
- **DCIM / Lifecycle:** Foreman, Cobbler, xCat, MaaS, Netbox
- **Databases:** MySQL, Percona, MariaDB, Galera, Oracle, PostgreSQL, Mongo, Redis, ClickHouse, Hadoop, HBase
- **Data Storage:** Oracle/Sun, Dell/EMC, SAS3, NVMeOF, UFS2, OpenZFS, XFS, LVM, Ext, Overlay, MergerFS, Ceph
- **Compute Architectures:** Intel x86_64, AMD EPYC, Arm64 8.x, IBM Power9, RISC-V
- **Networking:** Intel, Arista, Cisco, Juniper, Mellanox, Broadcom, Silicom, Chelsio, Napatech, OCP v1,2,3
- **Observability:** Grafana, Prometheus, Check_mk, Nagios, Elasticsearch, Kibana, Splunk, rSyslog
- **Secure Transit / VPN:** Wireguard, OpenVPN, IPsec, Nebula Mesh, SOCKS5
- **Linux Distributions:** RHEL, Rocky / Alma / Oracle, RTOS, Gentoo, Chimera, Debian (yes, also Ubuntu)
- **BSD + UNIXs:** FreeBSD, NetBSD, OpenBSD, Solaris, OpenIndiana
- **Kernel Engineering:** optimization, debugging, performance profiling and optimization on Linux + FreeBSD

Education + Industry Contributions

- University of Nevada, Reno NV, USA (1998-2002), major/minor: Computer Science, Philosophy
- Hardware enablement + ongoing fiscal sponsorship of multiple FOSS projects + code contributions
- Mentoring of L3 - L5 engineers for advancements in hardware, network, and systems engineering
- Advocate for Open Source technologies, with a focus on sustainability through ethical resource management

Personal Interests

- Neurology, Neuroscience, Endocrinology, Philosophy, Business Ethics, Embedded Systems Engineering
- Enterprise server hardware from less-common architectures: IBM PPC64le / POWER9, RISC-V, ARM64
- Vintage enterprise hardware from my youth: Sun UltraSparc, Apple PowerPC, Alpha, PA-RISC
- Backcountry Alpine + Telemark Skiing, Free Diving, Hiking, Cycling, Rabbits, Strawberries, Sci-Fi & Romance

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