

# JOHN KELLY

Staff Software Engineer

jkelly.io

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github.com/nulltrope

Staff software engineer specializing in global scale networks and distributed compute platforms. **8 years** designing and operating production systems serving **millions of requests per second** and petabytes of data per day. spanning in-kernel packet processing, L4/L7 load balancing, bare-metal server automation, and cloud network architecture.

## SKILLS

|         |                                                                                                                      |
|---------|----------------------------------------------------------------------------------------------------------------------|
| NETWORK | BGP, IPVS, Nginx, HAProxy, Envoy, CDNs, Internet & Web Protocols, Linux Kernel Networking, XDP/eBPF, WireGuard, VyOS |
| COMPUTE | KVM/Firecracker, Proxy-Wasm/WASI, Kubernetes, VMware, Proxmox, Ceph                                                  |
| INFRA   | GCP, AWS, Postgres, Cassandra, Varnish, Packer, Terraform, Ansible, Saltstack                                        |
| CODE    | Rust, Python, Go, Java, TypeScript, C++                                                                              |

## EXPERIENCE

### Discord

San Francisco, CA · Remote

#### Lead Staff Software Engineer // Traffic Infrastructure

Dec 2025 – Present

- Defined the network architecture and cross-cloud connectivity requirements for Discord's initial multi-cloud strategy, driving alignment across engineering, finance, and executive leadership
- Built client-side network error reporting that surfaces regional and ISP-specific outages affecting users globally, giving policy and CX teams actionable path-quality signal that server-side telemetry cannot see
- Designed an HMAC-signed header scheme for authenticating end-user requests at the CDN edge, enabling granular rate limiting and tiered abuse prevention based on client identity

#### Staff Software Engineer // Media Infrastructure

Feb 2024 – Dec 2025

- Led multi-CDN initiative serving **petabytes** of static assets daily, reducing latency **15%** and egress bandwidth costs **30%** through measurement-driven provider steering
- Developed internal content-addressable storage system enabling strong versioning of in-app assets uploaded to the global CDN, reducing developer friction and allowing immutable caching of highly fetched content at the edge.
- Optimized the mobile attachment upload flow with more efficient image compression, achieving **30% faster** upload latency

## Senior Software Engineer // Traffic Infrastructure

Jul 2022 – Feb 2024

- Migrated all inbound API traffic reaching ~2M RPS at peak to an Envoy-based proxy fleet, allowing for more precise traffic steering and circuit-breaking/bulkheading at the edge.
- Drove service mesh adoption by migrating 90% of core production services across 12+ infrastructure and product teams, migrating all production services from legacy client-side routing to Envoy proxy sidecars
- Designed and built a self-service traffic platform with TypeScript configuration, reducing new service infrastructure provisioning time **75%**

## Squarespace

New York, NY

## Software Engineer // Traffic Infrastructure

Dec 2019 – Jul 2022

- Built a custom DDoS detection and enforcement engine using XDP/eBPF, classifying and dropping attack traffic in-kernel at the earliest point in the datapath before it consumed userspace proxy capacity
- Replaced legacy hardware L4 load balancers with a software IPVS solution using direct server return (DSR), improving tail latencies and high-availability failover across on-prem and cloud footprints
- Reduced TLS handshake latency **15%** by designing and building a new L7 proxy to offload TLS termination at the edge

## Software Engineer // Compute & Storage

Jul 2018 – Dec 2019

- Automated the hypervisor hardware lifecycle across **a fleet spanning 20+ racks** in two data centers, spanning iPXE/iDRAC bare-metal provisioning through Packer/Ansible image baking, with rebuilt images rolled out fleet-wide daily
- Operated and capacity-planned **20+ Kubernetes clusters** across on-prem data centers and cloud, alongside VMware virtual machine infrastructure and Ceph storage clusters
- Built a Kubernetes operator to automatically provision and optimally schedule virtual machines, reducing developer toil and improving fleet resource efficiency
- Cut base image build time **80%** by reworking the Packer-based image pipeline

## PROJECTS

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### AS401898 – Autonomous System & Multi-Tenant Network Fabric

Ongoing · Colocation, home, and cloud

- Operate a production ASN with a direct ARIN IPv6 allocation (**/40**), running eBGP with an upstream transit provider from a colocated Proxmox/VyOS deployment
- Designed a multi-tenant addressing plan with VRF-per-tenant isolation and WireGuard overlays spanning colocation, home, and cloud environments
- Built a Python DSL that generates Ansible inventory from a declarative model of the fabric, making router and host provisioning repeatable across the estate

## EDUCATION

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### Bachelor of Science, Computer Science

May 2018

Stevens Institute of Technology – Hoboken, NJ