

AMAL ZACHARIA C.R.

contact@crza.dev ◊ crza.dev ◊ [GitHub](#) ◊ [LinkedIn](#)

PROFESSIONAL SUMMARY

Platform and infrastructure engineer with 5+ years of end-to-end production ownership across bare metal and multi-cloud environments. Built and operated distributed systems handling 200,000+ concurrent connections. Rebuilt production Kubernetes infrastructure five times across multiple providers and CNIs, each iteration driven by real cost, scale, or security constraints. Self-taught. Works best with full ownership, hard problems, and no hand-holding.

SKILLS

Languages	Go, TypeScript, Kotlin, Python, Bash
Orchestration	Kubernetes (k3s, rke2, AKS), Docker, Helm
Networking & CNI	Cilium (eBPF firewall, L2 announce), Calico (BGP), WireGuard mesh
Cloud & Bare Metal	AWS, Azure, Hetzner, OVH, Oracle Cloud, Contabo, DigitalOcean
IaC & Automation	Terraform, Ansible, GitHub Actions, GoReleaser
Observability	Prometheus, Grafana, Alertmanager, Loki
Databases	PostgreSQL, MongoDB, Redis, MySQL
Security	eBPF host firewalls, Cilium NetworkPolicies, mTLS, Cloudflare WAF
DNS & TLS	cert-manager (HTTP-01, DNS-01 via Cloudflare), wildcard certs
Architecture	Distributed systems, multi-tenant isolation, WebSockets at scale

EXPERIENCE

INDEPENDENT CONSULTANT

Apr 2020 - Present

Senior Platform & Infrastructure Engineer

Remote

- Designed, built, and rebuilt five production Kubernetes clusters across Hetzner, Contabo, Oracle Cloud, and OVH – each iteration driven by cost, scale, or security constraints.
- Current production cluster: rke2 + Cilium on OVH bare metal with zero-trust eBPF host firewall, Cloudflare-only ingress with mTLS, and hard tenant isolation via Cilium NetworkPolicies.
- Engineered distributed WebSocket infrastructure handling 200,000+ concurrent connections across 5-node bare metal k3s cluster on Hetzner using StatefulSets and protocol-level efficiencies.
- Built and operated cross-cloud WireGuard mesh connecting Contabo amd64 nodes and Oracle Cloud ARM64 workers, with multi-arch builds via GoReleaser triggered through GitHub Actions.
- Migrated production workloads from managed and VPS-based hosting to self-hosted Kubernetes on bare metal, reducing infrastructure costs by 90%.
- Rewrote Node.js services to Go using only the standard library – zero external dependencies – reducing per-task RAM from 1024MB to 32MB.
- Provisioned bare metal infrastructure from scratch – Ventoy boot, parted live, dd to disk, Debian installation, SSH and networking configuration.
- Operated solo on-call across all client systems for five years – no rotation, no escalation path, no separate ops team. Full ownership of incident response, postmortems, and runbooks.
- Maintained 3-4 long-term international client contracts continuously, all inbound, all retained at premium rates.

TECHNICAL PROJECTS

Multi-Cloud Bare Metal Kubernetes Infrastructure (2020-Present): Five-generation production cluster evolution.

- Stage 5 (current): rke2 + Cilium on OVH bare metal. L2 LB announcement, CiliumClusterwideNetworkPolicy host firewall with egress-only public interface enforced at eBPF layer. Traefik ingress restricted to Cloudflare IPs with mTLS pull. Hard tenant isolation between namespaces via incoming-decides NetworkPolicy model.

- Stage 4: 5-node Hetzner cluster. Calico BGP internode mesh, private VLAN for internode communications, Keepalived floating IP with Hetzner API hooks. Evaluated MetalLB + BGP for LB announcement – reverted after one month due to HTTP latency through cloud network routing.
- Stage 3: Multi-cloud cluster – Contabo amd64 masters and Oracle Cloud ARM64 workers connected via WireGuard mesh. Multi-arch Go builds via GoReleaser, node affinity for arch-specific scheduling.
- Full architectural evolution with reasoning at each stage documented at crza.dev.

Distributed WebSocket Infrastructure (2022-2024): System managing 200,000+ concurrent persistent connections.

- Deployed across 5-node bare metal k3s cluster on Hetzner using StatefulSets for stable pod identity and shard-based connection ownership.
- Rewrote from Node.js to Go with custom no-cache architecture – RAM reduced by 90% per instance.
- Multi-node egress to distribute outbound traffic across cluster IPs, preventing rate limit triggers.
- Projected managed cloud path: \$320/month for 80k connections. Actual: €175/month for 200k connections.

Task Automation Engine (2021-2024): Event-driven execution system for bursty workloads.

- Processed 50,000+ events per day at peak across multiple long-term clients.
- Prototyped on single VPS, migrated to AWS Lambda for parallel execution, then to Go services on Kubernetes.
- Rewrote critical paths from Node.js to Go – per-task RAM reduced from 1024MB to 32MB.
- Deployed on idle cluster capacity, reducing that portion of infrastructure cost to near zero.

Open Source: Public contributions on GitHub including Kotlin and TypeScript libraries – github.com/CRZA5.

CERTIFICATIONS

- AWS Certified Solutions Architect
- AWS Certified Cloud Practitioner

ADDITIONAL CONTEXT

Self-taught engineer. No formal degree. Full technical story at crza.dev.