

NATHANAEL RITZ

Infrastructure Strategist & Software Engineer

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PROFESSIONAL SUMMARY

Infrastructure Strategist with **17+ years** of applied research engineering experience, designing and operating multi-cloud SaaS infrastructure, specializing in reliability and cryptographic security. Proven ability to bridge abstract security theory with cloud-native production realities, including multi-provider cloud optimization. Active participant in the IETF. Open to Security Architecture Design, Standards-based Research & Development and Applied Protocol Engineering roles.

CORE COMPETENCIES

Zero-Trust Engineering & Design

Zero-Trust Architecture

Cross-Functional Collaboration

Systems Engineering

Cross-Functional Collaboration

ProVerif Formal Analysis

Cloud & Reliability

Multi-Cloud Architecture

HA/Disaster Recovery

PROFESSIONAL BACKGROUND

IETF Protocol Design & Security Research Participation

Collaborating on multiple Internet-Drafts submitted to the SEAT, WIMSE, and RATS working groups, participating with engineers from across industry leaders such as Arm, Nokia, and Fraunhofer SIT.

- **Protocol Engineering:** Primary editor of "[SEAT Architecture](#)," mapping the intersection of technology composing secure transport-layer protocol with standards-based remote attestation, and "[SEAT Proxies](#)," addressing end-to-end binding across TLS-terminating middleboxes
- **Protocol Design Collaboration:** Collaborating with co-authors of "[WIMSE Workload Attestation](#)" and the RATS "[RARE](#)" API specification
- **Formal Methods & Vulnerability Analysis:** Applied ProVerif symbolic modeling to [analyze intra-handshake attestation](#). Contributed formal models and architectural critique to SEAT working group discussions evaluating KEX downgrade and relay attack mitigations (e.g., CVE-2026-33697).

CleanPix Corporation – Calgary, AB

Infrastructure Strategist • 2011–Present

- **Systemic Resilience & Cloud Strategy:** Architected and executed a geo-redundant, multi-provider cloud strategy across Vultr, Linode, and Genesis Cloud, migrating off AWS and reducing infrastructure opex by ~75% while preserving uptime and business continuity.

- **Data Engineering:** Deployed a multi-site MySQL cluster for cross-provider replication and failover, supported by a Kafka buffering layer that improved API latency under heavy load.
- **Infrastructure as Code & CI/CD Automation:** Authored a complete Git-driven CI/CD framework to automate build, test, and deploy pipelines across 12+ service roles, incorporating dynamic per-role manifest generation and just-in-time secret delivery.
- **Agile Delivery:** Automated integration testing using BDD principles with Gherkin/Cucumber feature files that strictly gate production deployments, ensuring predictable release cycles.
- **Production Operations:** Maintained 24/7 on-call responsibility as the primary responder for production incidents, managing DNS, WAF protection, and load balancing via Cloudflare.

Product Champion • 2011–2016

- **Technical Execution & Collaboration:** Bridged business requirements and technical execution through daily collaboration with the head software architect, translating client and operational requirements into actionable user stories and acceptance tests.

Deployment Specialist • 2007–2011

- **Recovery Design:** Recovered a botched Sun to Apple Xserve migration following a catastrophic XRAID hardware failure, successfully restoring critical endpoints from near-total data loss and ensuring business continuity.

TECHNICAL HIGHLIGHTS

Security & Cryptography

Zero-Trust Architecture Formal Verification (ProVerif)
Remote Attestation (IETF RATS)
TLS RA (IETF SEAT WG) HPKE (RFC 9180)

Data Systems

Apache Kafka MySQL Clustering
Object Storage (Wasabi S3) REST APIs

Languages

Python Java JavaScript SQL

Cloud & SRE

Multi-Cloud Federation (AWS, Vultr, Linode)
HA/DR/BC Cost Optimization
Cloudflare (DNS/WAF/LB)

DevOps

Linux Bash Docker Docker Compose Git
CI/CD Infrastructure as Code
BDD (Gherkin/Cucumber)

EDUCATION

Diploma, Digital Graphics Communication

SAIT (Southern Alberta Institute of Technology), Calgary, AB | 2007

Foundation in UX/design evolved into a specialization in systems architecture and integration.