Perry's Résumé - Solutions Engineering & Cybersecurity

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Abstract

Solutions engineer for networking and cybersecurity, decades of experience on both sides of the customer table: RTU firmware and a multi-route SCADA protocol still carrying pipeline control traffic for Enbridge, and seventeen years of consulting discovery, scoping, proposals and decision records for energy and industrial clients. Zero Trust and segmentation are things I have built, not just sold – a DNP3 data diode, passkey authentication, the OT boundary itself. Runs a cybersecurity practice that dog-foods every architecture it proposes. Edmonton area; remote. (PDF, Text)

Skills

- **Pre-sales & solution architecture:** discovery and workshops, opportunity development, scoping, proposals and decision records, POCs and demos, measured-before-promised solution design, handoff documentation.
- **Networking:** TCP/IP, UDP, HTTP(S), TLS 1.3/mTLS, QUIC; degraded-link and satellite WAN engineering, multi-route fault-tolerant transport; segmentation, firewalls and the IT/OT boundary; data diodes and unidirectional gateways.
- **Cybersecurity:** Zero Trust and ZTNA/SASE-class architectures; passkey/WebAuthn identity with no reusable credential store; Ed25519-signed software delivery; OT/ICS security; AI security and local-inference operations.
- **OT & industrial:** SCADA (RTAP, Ignition with CI/CD and offline runtime simulation), RTU firmware, EtherNet/IP and CIP (author of `cpppo`), Modbus, DNP3, large-scale PLC simulation (`datasim`).
- **Energy & field:** Enbridge pipeline control, Alberta oilfields, a fleet of hundreds of remotely monitored Starlink-connected sites.
- **Continuity & recovery:** checksum-proven, snapshot-recoverable data; signed manifests; recovery rehearsals measured against a defined scope.

Experience

IT/OT Solutions Engineer - *Vantage Engineering* (Spruce Grove, AB 2026–present)

Designing the boundary between field equipment and the systems that use its data.

- Developed a secure DNP3 data diode supplying real-time field data to IT systems while leaving OT field equipment unreachable from the IT side – segmentation in hardware, at a fraction of commercial diode cost, without relaxing the unidirectional guarantee.
- Built Ignition SCADA CI/CD: pre-deployment testing of Ignition Python scripts against CPython 2.7, Jython and Ignition's own Jython over an offline runtime simulation; Git-managed deployments.

R&D Consultant & Solution Architect - *Dominion R&D Corp.* (Remote, 2009–present)

Discovery, scoping and delivery for energy, fintech and industrial clients; remote systems that run unattended for years.

- Founded Dominion Cyber-Security (an arm of Dominion R&D Corp.), a practice whose own site and services run the architectures it proposes: self-hosted passkey authentication (LocalWebAuthn), checksum-proven recoverable data, and an AI assistant served from hardware we hold – dog-fooded before it is ever proposed to a customer.
- Seventeen years of customer-facing consulting: discovery, workshops, scoping, proposals, design reviews and written decision records – the pre-sales discipline under a consultant's letterhead.
- Created `cpppo`, the Python EtherNet/IP and CIP library used worldwide as the integration layer between analytics and the PLCs on the plant floor – plants your customers operate.
- Built `datasim`, a large-scale PLC simulation environment (hundreds of concurrent PLCs) that records and replays field data and injects latency, loss and bandwidth limits, so a vendor's polling behaviour was measured against degraded WAN routes before cutover rather than discovered after.
- Built and operate `BUCKy`, a production local-LLM service (llama.cpp, mlx) grounding a ~100K-token knowledge base at ~10x lower per-query cost, running on commodity Mac hardware.
- Deployed and operate a fleet of hundreds of remotely monitored Starlink-connected routers across remote sites: indoor/outdoor WiFi, camera monitoring, and on-site PCs running AI image analysis (Blue Iris) that triggers event reporting and annotates video segments.

Software Engineer - *clearGRID Ltd.* (Kelowna, BC 2017–2022)

- Built a real-time receiver that polyphase-filterbank-channelized a 25 Msps I/Q stream into 200 kHz channels, decoding SCM reports on 64 concurrent 900 MHz ISM-band channels, sustained, with no dropped samples on commodity ARM/x86-64 hardware.

Sr. IT Advisor - *Enbridge Pipelines* (Edmonton, AB 2002–2009)

Custom RTUs and communications for hydrocarbon pipeline control; the protocol is still in operation.

- Developed solid-state RTU firmware for continuous 24/7 control in remote locations, sustaining fewer than 1 defect per 10,000 lines of code, measured in the field.
- Architected LiveWIRE, a cryptographically secure, Reed-Solomon erasure-coded, multi-route protocol for real-time SCADA telemetry over marginal and intermittent links.
- Deployed hundreds of ruggedized units across critical infrastructure sites.

Software Developer - *Hewlett-Packard* (Calgary, AB 1989–1996)

- Re-engineered the core alarm engine of the RTAP SCADA platform around DFA state machines; still deployed in pipeline SCADA systems continent-wide, 30+ years on.

Architectural Perspective

Systematically and safely converting O(1) attack surfaces and failure points into O(N) decentralized, failure-limiting systems is the highest-value and least-sold work in the catalogue.

- Conventional defences are O(1): a firewall, a directory, a credential store – a single gatekeeper whose compromise yields the entire estate.
- The defences displacing them are O(N): per-device credentials, per-actor authorization, distributed verification – each requiring separate attack, with no repository whose capture yields the whole.
- It is hard to put on a price list (few centralized infrastructure vendors would benefit from selling it), which is why it is under-sold; it is also what customers remember their advisor for.

Open Source

- cpppo - Industrial EtherNet/IP, CIP and Modbus protocol implementation (Python)
- LocalWebAuthn - self-hosted passkey-only authentication (TypeScript)
- ezpwd-reed-solomon - Reed-Solomon and BCH FEC, used by aerospace and defence (C++/JS/Python)

Education

B.Sc. Computer Science - *University of Calgary* (Calgary, AB 1984-1989)