Patrick Nelson

Senior DevOps Engineer | AI-Powered Infrastructure | Cloud-Native Systems

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SUMMARY

Senior DevOps Engineer with a platform engineering focus, specializing in large-scale microservice architecture on Azure Cloud and AI-powered infrastructure operations. I build and maintain AKS environments orchestrated through FluxCD, develop diagnostic tooling using the Model Context Protocol (MCP), and lead Copilot adoption and training. Background spans cloud-native infrastructure, firmware build systems, and hardware security — with a consistent focus on building reliable, composable systems that other engineers can build on.

TECHNICAL SKILLS

Cloud Platform: Azure (extensive experience across the platform)

Kubernetes & GitOps: AKS, FluxCD

Infrastructure as Code: Terraform

Compute & Storage: Azure Virtual Machines, Blob Storage

Databases: Azure SQL Managed Instance, Azure Database for PostgreSQL Flexible Server

Messaging & Events: Azure Service Bus, Event Grid, SignalR, Azure Communication Services, HiveMQ MQTT

CI/CD: GitHub Actions, Azure DevOps, Jenkins

Security: Microsoft Defender, CrowdStrike, Qualys

PKI, DNS & Security: DigiCert ACME, cert-manager, external-dns, HSM (Luna / Thales)

Observability: Azure Monitor, Application Insights, ECK (Elasticsearch, Kibana, Filebeat)

Integration Testing: Playwright

AI & Developer Tooling: Model Context Protocol (MCP), GitHub Copilot, Claude Code

Languages: Go, Python, Bash, PowerShell, C/C++, Java

Firmware & Embedded: Yocto Project

Operating Systems: Linux (Debian, RHEL), Windows Server

Version Control: Git, GitHub, TFVC, SVN

EXPERIENCE

Senior DevOps Engineer — Johnson Controls, Westford, MA

Aug 2024 – Present

- Architect and maintain large-scale microservice deployments on AKS, managing service reliability, deployment strategy, and GitOps-driven delivery with FluxCD.
- Design and build MCP-based diagnostic tooling that provides AI models with structured access to real-time cluster and infrastructure state for intelligent troubleshooting.
- Develop approaches to AI observability, using MCP-based architectures as a control plane for Azure cloud resources.
- Built post-deployment validation gates using Playwright and Helm test hooks, integrated with automated rollback and notification pipelines.
- Lead Copilot adoption and training across the engineering organization, including authoring ADRs, runbooks, and adoption frameworks.
- Serve as team lead, coordinating priorities and work across engineers to deliver on platform and infrastructure initiatives.
- Develop custom infrastructure tooling in Go to support monitoring, diagnostics, and operational workflows.

DevOps Engineer — Johnson Controls, Westford, MA

Oct 2021 – Aug 2024

- Managed and modernized CI/CD pipelines across GitHub Actions and Azure DevOps, creating reusable workflow patterns adopted across teams.
- Led migration of legacy source control systems to GitHub, modernizing version control and collaboration practices.
- Implemented on-premises HSM infrastructure for secure key management, significantly reducing certificate management costs.
- Developed reusable Terraform modules to enforce consistency and repeatability across cloud environments.
- Built and optimized a Yocto-based firmware build system that reduced build times by 50% and remains in production use.
- Architected cloud infrastructure to replace legacy on-premises systems, transitioning critical workloads to Azure.

High Tech Repair / Technical Support II — Zahn Dental (Henry Schein), MA

Jan 2018 – Aug 2020

- Provided advanced technical support and hands-on repair for CAD/CAM systems used in dental prosthetic fabrication, including 3D printers, CNC milling machines, and intraoral scanners.
- Diagnosed and resolved complex hardware and software issues across platforms including 3Shape, Exocad, and proprietary manufacturing systems.
- Supported precision machining and 3D printing workflows in a medical device environment, ensuring equipment uptime and fabrication accuracy.

EDUCATION

Bachelor of Science in Computer Science (In Progress) Arizona State University — Ira A. Fulton Schools of Engineering Credits Earned: 94 | ASU GPA: 3.76

CERTIFICATIONS

- Microsoft Certified: Azure Fundamentals
- GitHub Copilot Certified (GH-300)