

## JUSTIN T. KNOX, BSc, CISSP

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### SUMMARY:

- L3 Networking, Systems & Cyber Security Engineer with 20 years of experience in the tech industry.
- 10+ years of professional experience in automation, support and development.
- Demonstrated leadership, problem-solving and adaptability with expertise in mentoring, training and project delivery.

### EXPERIENCE:

**Senior IT/OT Infrastructure Administrator, ICS/OT Cyber Security (LIII)** Sep 2023 - Present  
Great Lakes Water Authority, Operational Technology Cyber / Information Systems Security | Direct-Hire | Onsite to eventual 20% Remote | Detroit, MI

Developed, implemented and maintained the information, operations and network technologies of the Great Lakes Water Authorities process control network; in accordance with the guidelines published within the NIST's Cybersecurity Framework 2.0 and 800-153 documents.

- Piloted the internal IAM system for organizational internal use, increasing password entropy complexity within the organization by 8 %.
- Implemented TLS 1.3 authentication for an increased usage of authenticated encrypted sessions by over 43%.
- Designed, developed and deployed the internal Internet Protocol Address Management (IPAM) and network design platform on PostgreSQL, Redis and Jenkins platform-based technologies.
- Built, deployed and tuned an additional internal SIEM to increase network visibility by 60%; with increased visibility into network related events by 2 orders of magnitude.
- Conducted and implemented an internal organizational Data Security program, in line with full CSF 2.0 adherence.
- Developed and implemented malware analysis, categorization and archival systems.

**Skills:** JSON · ReST · JavaScript · PowerShell · NMap · SIEM · Suricata · Splunk · ElasticSearch · Snort · Salt · Puppet · Chef · EPO · EDR · EDS · DLP · CMBD · IPAM · Metasploit · Cisco ISE · Cisco DNA · FortiNAC · FortiGate · Windows AD / Active Directory · LDAP · x509 · TLS 1.3 · DNS · DNP3 · Modbus · NIST 800-153 · CSF 2.0 · Wireshark · tcpdump · nc · nmap · IAM · Nessus · Purdue Model · SCADA

### Systems Engineer

June 2023 – Sep 2023

Corewell Health, Critical Environment Engineering (CEE) | Contract, MaTech Resources | Onsite to eventual %20 Remote | Grand Rapids, MI

Collaborated with the cross-functional agile train to deploy, provision, and maintain the companies existing and future infrastructure across OSI L1-4.

- Doubled the production compute infrastructure within a 40% faster than estimated delivery time through providing experienced deployment methods using industry best practices.
- Decreased CEE related incidents by 4% through complete audit and documentation overhaul for the East MI region (in progress).

**Skills:** SQL · JavaScript · GitHub · Python · PowerShell · Bash · Splunk · SCADA

### Sr. Network Engineer

March 2023 – June 2023

jPeg Design | Research & Development, Deployment, Support & Maintenance | Direct-Hire | 100% Onsite | Dundee, MI

Worked in a 3-person team to design, deploy and maintain small to medium business infrastructure.

- Developed the company's first inventory, customer, client and installation databases, effectively eliminating 15 hours / week / user for prior data entry.
- Developed in-house automation software, including password management and deployment monitoring software.

**Skills:** PostgreSQL · Python · GitHub · Azure PostgreSQL · AWS · GCVE · PowerShell · Bash · MoIP · Cisco CLI

**Freelance Technical Consultant, CTO**

December 2021 – March 2023

Alchemy Computing, Dumptd | Research & Development, Systems Architecture | Direct-Hire | 100% Remote | Washington DC

Developed and implemented features, coordinating with engineering teams for the prototyping of front end and back-end systems in the creation and deployment of company infrastructure. Primary clients were in the startup space.

**Skills:** Laravel · Ruby · Ruby-on-Rails · PHP · TomTom API · Google Maps API · Ansible · Docker · Python · GitHub · RedHat KVM · Docker · GCVE · Active Directory · Windows Server 2016 · MoIP · VoIP · Cisco CLI · Juniper · pfSense · PlatformIO · JSON · HTML · MySQL · PostgreSQL · OpenBSD · Iptables · Palo Alto Firewalls · RFID · QR-Code Programming

**Senior Infrastructure Operations Engineer (LII), GCVE Tech Lead (LIII)**

December 2018 – December 2021

Google | Engineering Field Services, Server, Network & Hardware Operations Teams | Direct-Hire, Tech-level 3 | Reston, VA

Worked in the global EFS team covering all architectures for the entirety of the Google production fleet. Collaborated with a 12-member team to lead projects and teams to deploy, maintain and configure the production infrastructure from Layers 1 – 4 of the OSI model.

- Provided zero loss to five-9 SLO and SLA during the 400% increase to production load of the Covid-19 outbreak with an 80% reduction in staff.
- Saved the company an estimated \$450k in lost compute time to isolate an issue occurring on the power line which took 8 months to gather the data for conclusive enough evidence to change the design.
- Led the project team which deployed 1/3 of the GCVE infrastructure in which we were able to complete the project 75% ahead of schedule. All contractors on the team were converted to full time.
- Built and deployed globally distributable internal systems monitoring, configuring and reporting software to effectively eliminate 80% of my original job functions.
- Hosted and developed internal “lunch & learns” covering Emacs, Linux and systems internals w/ 12-20 people in recurrent attendance.
- Received 19 Peer Bonuses and 2 Challenge Awards for Hurricane and Pandemic Support

**Skills:** SQL · GSQL · Kubernetes · CI/CD · HTML · JavaScript · CSS · Bash · C++

**Network Operations Technician**

July 2017 – December 2018

Switch LTD | Network Operations | Contract to Hire | 100% On-site | Las Vegas, NV

Coordinated with engineering teams to provide infrastructure support.

- Implemented custom programmed outlook filters combined with email lexical analysis to autogenerate tickets based on customer emails saving approximately 65% of time spent answering emails.

**Skills:** AutoHotkey · BGP · PowerShell · Splunk

**Systems Administrator IV**

October 2016 – June 2017

Pinnacle Community Services | Information Technology | Direct-Hire | 100% On-site | Las Vegas, NV

Worked in a marketing automation platform organization, assisting businesses of various sizes. Collaborated with a 1,200-person team to improve security and comply with SOC 2 and PCI-DSS. Led projects to strengthen security processes and promote best practices.

- Developed internal file-share-system and converted over to bring organization into HIPAA compliance.
- Created Porteus system images to access in-house customer care system from Windows XP machines for approximately 30 remote sites.
- Secured the companies trunks using IPsec over GRE on Cisco and Avaya infrastructure.
- Saved the company approximately \$80k from unneeded legal hours through conducting an in-house investigation using the Sleuth digital forensics toolkit to procure documents required for discovery.

**Skills:** Cisco · Avaya · Windows Server 2012 · Active Directory · Samba · Kerberos · Porteus Linux · Java · PowerShell · BSD

### **Technical Specialist II**

November 2013 – April 2015

Scientific Games | Technical Documentation and Training | Direct-Hire | 100% On-site | Las Vegas, NV  
practices.

- Brought travel expenditures down by 95% through creating a digital library of in-house training videos through the Casino Laboratory that our team also created.
- Saved approx. 650 hours / week in labor through consolidating the Geographic Dependent Jurisdiction codes technicians were sourcing in to a single database.

**Skills:** Microsoft SharePoint · Arch Linux · PHPFM · Memcached · NGINX · Apache · WordPress · Jekyll · Markdown · Yammer

### **Freelance Technical Consultant**

September 2009 – November 2013

Alchemy Computing | Information Technology | Las Vegas, NV  
practices.

- Focused specialties included in-home PC Repair, small website development, electronics prototyping.

**Skills:** C++ · OpenCV · Java · Processing · NodeJS · Bluetooth Protocol · RTSP · MIDI · ClamAV · Malware Removal · Digital Forensics · Data Recovery

### **Network Event Management Technician III**

May 2008 – September 2009

British Telecom | Converged Services Management Center | Contract-to-Hire | 100% On-site | El Segundo CA  
Assisted with the internal acquisition of Infonet's global NOC to the UK's infrastructure.

- Kept the UK's network functional through the 2008 Olympic games through acquiring total coverage over the management platform for OSI L1-3 over a Cisco, Juniper, Alcatel-Lucent, Ciena mixed platform.

**Skills:** MPLS, EIGRP, IGRP, SDH, PDH, ATM Frame-Relay, TCP/IP V4/V6, SIP, ARP, CDP, CARP, EIGRP, OSPF, BGP, VTP, EtherChannel, 802.1Q trunking, QoS, Multicast, 802.11a/b/g/n/ac, IPsec, LDAP, RADIUS/TACACS+, SNMP, NTP, VRF and HTTP/HTTPS

### **Junior Electronics Engineer**

June 2006 – November 2007

Synetcom Digital | Research and Development | Direct-Hire | 100% On-site | El Segundo, CA

Worked in the engineering team developing industrial SCADA radios for monitoring digital IO, 4-20ma sensor loops, PWM, and industrial video applications.

- Provided increased customer acquisition through developing the GUI for the PLC system's first user control panel.
- Prevented external theft of IP through securing the internal LAN communications prior to one particular vendor visit.

**Skills:** digital IO · Industrial Automation · 4-20ma sensor loops · PWM · Allen Bradley · PLCs · PIC Programming · BASIC Stamp Development · Propeller Chip · FHSS · Antenna Design and Implementation · EagleCAD · EWB · National Instruments · Oscilloscope · Function Generator · Traffic Generators · Standard Laboratory Equipment · Spectrum Analyzer · Embedded Linux · Windows CE · C++ · Ladder Logic

### **Tutor and Laboratory Technician**

March 2004 - June 2006

DeVry University | Network Laboratory | Direct-Hire | 100% On-site | Long Beach, CA

Tutored students in the network security and advanced micro peripheral courses. Focused specialties included:

- Network Design, Engineering & Architecture
- Cisco CLI commands, interfacing and scripting.
- Implementing network configurations with Java
- Network Packet analysis

**Skills:** C++ · Java · Wireshark · Cisco · Novell · Windows 2000 Networking · RedHat Linux · Gentoo · TCP/IP Packet Optimization

## **EDUCATION:**

M.S.C.S. Data Science and Intelligent Systems (IN PROGRESS)  
University of Tennessee, Knoxville  
Thesis: (to be determined)

PROJECTED December 2025  
Knoxville, TN

B.Sc. Full-Time Program, Honors Graduate, GPA: 3.6  
DeVry University, Long Beach

March 2008  
Long Beach, CA

- Best Campus Senior Project, 2008, "Fingertip Effects". Implemented machine vision which tracked LEDs worn on a user's hands to generate DSP audio and music effects. Using a custom protocol over RS-232, the Motorola interfaced with the Analog Devices Blackfin DSP.
- Associated Student Body President, Spring 2005 – Fall 2005, Spring 2006-Fall 2007

## **CERTIFICATIONS/PUBLICATIONS/PROFESSIONAL ASSOCIATIONS:**

• CISSP / Certified Information Systems Security Professional  
International Information System Security Certification Consortium, ISC2, Active as of: March 2024

• SEC+ / Security+  
Computing Technology Industry Association, CompTIA, Active as of: December 2023

• Amateur Radio License, Technician Class, KF8BVZ  
Federal Communications Commission, FCC, Active as of: July 2024

## **SKILLS:**

- Languages: C, C++, Java, SQL, BASH, LaTeX, YACC, YAML, XML, HTML, CSS, JavaScript, Ruby, Python, Assembly
- Cloud / Server / HyperVisor Operating Systems: Windows 10, Windows 2016, RHEL 7, Linux (VMWare), ESXi, OpenBSD, FreeBSD, NetBSD, Docker, XCP-NG, EVE-NG, VirtualBox
- Windows: Sysinternals, PowerShell, Windows Subsystem for Linux, WMIC, Firewall, and Registry
- Virtualization: ESXi, VMware, VirtualBox, Docker, AWS EC2

## **PROJECTS:**

"Homelab" - FOSS Home Computing

<https://sites.google.com/view/justinsdevlab/home>

Description:

Fully self-hosted search, DNS, firewall, remote access, file storage, cryptocurrency mining and blockchain hosting.

Technologies used:

SearxNG, dnsmasq, Cisco 1841, Palo-Alto PA-500, OpenVPN, IPSEC, GRE, BGP (dn42), FreeNAS, NFS, Monero, Dash, Litecoin, Ethereum, Bitcoin (miners and full-nodes)

"Cyboard" - Longboard Security System and Datalogger

Description:

Raspberry Pi based "Smart skateboard", with on-device weather detection, key fob, motion and GPS.

Technologies used:

Python, SQLite, GPS PA1616S, Raspbian, NeoPixel LED, Remote Control Encoder PT2262, SHT30 Sensor, ADXL343 - Triple-Axis Accelerometer

## **VOLUNTEER/LANGUAGES/AWARDS:**

- Awards: Best Senior Project 2008.
- Social Languages: (Almost) Conversational in Spanish, Studied Portuguese in Brazil, Serbian in Serbia