

Stacey Pellegrino | Curriculum Vitae

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Full-Stack Developer | UNIX/UNIX-like Senior Systems Engineer and Administrator

PERSONAL STATEMENT

Over 20 years of experience in UNIX/UNIX-like systems engineering (featuring kernel development) and administration across multiple sectors, including bespoke in-house hosting, e-commerce, telecommunications, FinTech corporations (retail and investment banking), IT systems integrators and vendors. Maintains high standards of professional conduct, including being dynamic and adaptable to change. Proven experience in technical delivery with a strong focus on process and change management. Recently graduated a Master of Science (MSc) degree in Computer Science (distinction).

Core programming skills and expertise include C/C++ and C# .NET, Jakarta (Java Enterprise Edition), scripting with Python, Perl, Bash, full-stack JavaScript and Solidity with web3.js (Ethereum JavaScript API). Achieved gold badges for Python and Java challenges on HackerRank. Proficient in UNIX/UNIX-like systems engineering, administration and management, including installation, configuration, support, with automation and analytical troubleshooting, for Solaris, OmniOS, various Linux distributions, FreeBSD and OpenBSD. Cloud experience includes Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP) and Oracle Cloud.

Skills and expertise in UNIX/UNIX-like systems administration, engineering and consultancy, allowed me to demonstrate improving business operations and capabilities by solving complex problems to help optimise performance, automate processes and reduce costs. Responsible and accountable for critical systems' reliability, availability, serviceability, performance and security. Core business values, include being customer focused, with an attention to detail, stress-resistant and organised regarding time management, especially in time pressured mission-critical environments.

IT SKILLS

PROGRAMMING SKILLS:

- Jakarta (Java Enterprise Edition) using JUnit, Maven and Tomcat.
- Java EE frameworks Spring Boot, Spring Security, Spring Thymeleaf and Spring MVC.
- C/C++ and .NET C# with Microsoft Visual Studio utilising Financial Information eXchange (FIX) APIs.
- Python, Perl and Bash scripting.
- Solidity (for developing smart contracts that run on the Ethereum blockchain) with Remix IDE, Truffle, Ganache and MetaMask.
- Machine learning and mathematical libraries .NET Accord (C#), sklearn (Python) and GNU Octave.

WEB TECHNOLOGIES:

- HTMLv5/CSSv3 with JavaScript (including JQuery).
- MEAN stack (MongoDB, ExpressJS, AngularJS & NodeJS).
- LAMP stack (Linux, Apache, MySQL & PHP).
- Python (with Flask for RESTful microservices).
- Nginx.

APPLICATION PROTOCOLS:

- HTTP/HTTPS.
- SMTP and IMAP.
- LDAP, NIS+ and NIS.
- DNS with Unbound.
- DHCP.
- NTP.

SYSTEMS ADMINISTRATION:

- Live systems monitoring and support with analytical troubleshooting.
- Deployment automation and installation from TFTP boot, Kickstart (using PXE), Solaris JumpStart and Automated Installer.
- User and group management.
- OS upgrades and patching (including security fixes as per CVE).
- High-Availability clustering solutions with RSF-1, SunCluster and Veritas Cluster Server.
- Log management.
- File system and volume management (including quotas and ACLs).
- Storage, backup and disaster recovery.

CONFIGURATION MANAGEMENT:

- CI/CD pipeline experience (development to staging to production).
- Terraform, Ansible, Jenkins and GitLab.

OPERATING SYSTEMS:

- Solaris and OmniOS.
- GNU Linux: Oracle Linux, Red Hat Enterprise Linux, Debian, Kali, Ubuntu, Alpine, Gentoo, VMware Photon OS and Microsoft WSL.
- OpenBSD and FreeBSD.
- Apple macOS and Microsoft Windows.

HARDWARE:

- A well-informed comprehensive understanding of giant-scale AI and HPC applications with the NVIDIA GH200 Grace Hopper Superchip (CPU+GPU) and NVLink-C2C (chip-to-chip interconnect).
- Oracle Sun X4-4.
- Sun Fire X4100 M2/Sun Fire X4200 M2.
- Dell PowerEdge R620.
- Hewlett Packard Enterprise ProLiant G7 and G6 series.
- Orange Pi 5 Plus.
- Raspberry Pi 4 Model B.
- NETGEAR Smart XS716T switch.
- Extreme Networks BlackDiamond 6808 core switch.
- Extreme Networks Summit1i.
- Extreme Networks Summit48 switches.
- Synology DS1817 NAS Diskstation.
- Brocade SilkWorm 2800/2400 SAN switches.
- QLogic SANbox-2A-16.
- QLogic SANbox-16STD.
- QLogic SANbox-8.
- StorEdge 6900 series.
- StorEdge T3+/T3.
- StorEdge D240.
- StorEdge D2.
- StorEdge S1.
- StorEdge A5x00.
- StorEdge D1000/A1000.
- EMC Clariion CX3 UltraScale CX3-80, CX3-40 and CX3-20.
- Sun Fire 15K, Sun Fire 6800, Sun Fire 4810/4800 and Sun Fire 3800.
- Sun Fire V880/V480, Sun Fire 280R and Sun Fire V120/100.
- Enterprise 10K, Enterprise 6500/6000, Enterprise 5500/5000, Enterprise 4500/4000, Enterprise 3500/3000, Enterprise 450/250 and Enterprise 420R/220R.
- Netra ft 1800, Netra ct 1600/800/400, Netra 20 (Netra T4), Netra T1 AC200/DC200 and Netra 120/X1.
- Sun Blade 2000, Sun Blade 1000 and Sun Blade 150/100.
- Ultra 80, Ultra 60, Ultra 30, Ultra 10, Ultra 5, Ultra 2 and Ultra 1.
- Sun Ray 3 Plus, Sun Ray 150, Sun Ray 100 and Sun Ray 1.

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STORAGE:

- ZFS, UFS/SVM, Solstice Backup, VxFS/VxVM, Veritas NetBackup and Backup Exec.
- Sun MPxIO, Veritas Dynamic Multi-Pathing and EMC PowerPath.
- RAID, iSCSI, SAN and NAS.

DATABASES:

- Oracle, MySQL/MariaDB and PostgreSQL (RDBMS).
- MongoDB (NoSQL).

NETWORKING:

- OSI and TCP/IP layers (including 3-way handshake).
- IPv4 and CIDR addressing.
- VLANs.
- Bonding (including LACP).
- Traffic shaping.
- Routing (RIP).
- Firewalls (Linux iptables and OpenBSD pf clusters with CARP).
- NFS (with AutoFS) and Samba.

MONITORING:

- SNMP and rpc.rstatd.
- SAR, mpstat, vmstat, iostat and netstat.
- JPerfmer, CloudWatch, Netdata, Grafana, Prometheus, Kibana and Graylog.
- auditd and syslogd (including centralised logging).

SECURITY:

- SSH.
- IPsec.
- SSL/TLS.
- Kerberos (integrated with LDAP backend).
- Wireshark.
- Nmap.
- Metasploit.
- Nexpose.
- Nessus.
- Mozilla Firefox with extensions such as Event Spy, Web Developer, FormFox, Live HTTP Headers and Tamper Data (for reverse engineering web applications).

EDUCATION

University of Greenwich: MSc Computer Science: Graduated with a distinction and an overall grade of 90% (Sept 2020 - April 2023).

MSc Project: Compiler Construction (Theory and Application)*

Grade: 88%

*Available for review upon request.

Programming Enterprise Components	Grade: 100%
Clouds, Grids and Virtualisation	Grade: 98%
Machine Learning	Grade: 95%
Enterprise Software Engineering Development	Grade: 93%

Penetration Testing	Grade: 91%
Software Quality Management	Grade: 85%
Cyber Security	Grade: 83%
Applied Machine Learning	Grade: 81%

Highlights of the MSc Computer Science:

The MSc Project was effectively the development of a new bespoke, high-level programming language written in C++ that generated x86 assembly language.

Authored and freely distributed, a comprehensive quick reference to the UNIX/UNIX-like command line, featuring an introduction to the historical evolution of UNIX and essential fundamentals, including file system navigation, the composition of a typical UNIX file system, managing files and directories, working with text files, redirection and file descriptors, user environment, users and groups, system and package management, running programs, help and support, date and time, process management, networking, advanced file system and volume management, system performance monitoring, regular expressions and vi.

Experienced with the SCRUM framework utilising a Kanban workflow. Engaged as a SCRUM Master that coordinated a team of five developers using the JavaScript MEAN stack, featuring reusable design patterns derived from UML and ERD documentation. There was also an element of systems administration for version control, utilising GitLab, as well as cloud administration for an AWS deployment.

Attained a grade of 100% for developing a financial banking solution, written in over 7000 lines of Java (Jakarta) code, completed within three months.

LinkedIn My Learning: [Bash, Python, VMware, DevOps and IT Management.](#)

GitHub: <https://github.com/stacepellegrino>

Udemy:

Complete DApp - Solidity & React - Blockchain Development (Solidity/JavaScript).
Build a Blockchain & Cryptocurrency | Full-Stack Edition (JavaScript).
Build Your Own Proof-of-Stake Blockchain (Python).
Blockchain Programming (Python).

SunU (internal courses):

Solaris Internals for Employees.
Sun System Principles and Performance Tuning.
Sun Fire Applied Solutions Training.
Analytical Troubleshooting (Kepner Tregoe).*

SunEd (external courses):

Sun Enterprise 10000 Administration.
Sun Systems Fault Analysis Workshop.
Sun Enterprise Server Maintenance.
Solaris 8 System Administration II and I.

*Strategic and operational decision making processes derived from preemptive Cold War strike methodologies adapted and further refined to engineering disciplines.

Certification: Oracle Solaris 10 System Administrator Certified Professional.

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VOCATIONAL HISTORY

KRD Media

Senior UNIX Systems Engineer and Administrator

Sept 18 - Sept 20

- Contract focused on leading an exclusive in-house IT infrastructure project with an emphasis on UNIX/UNIX-like systems engineering (including kernel hacking), administration and security.
- OmniOS and OpenBSD were the main systems (aligned with the robust security principles and ethos deeply rooted in the OpenBSD community).
- Managed per site deployments of 3-node OpenBSD firewall clusters with stateful packet filtering (mirroring connection state information across nodes) resulting in less than 3 seconds pause prior to network service resumption during uploads/downloads seamlessly continued during failover.
- Deployed 4-node stretched ZFS clusters with a near-guaranteed data integrity.
- Implemented and tested disaster recovery procedures across multiple sites, with stateful heartbeats relayed via multi-cloud vendors, resulting in less than 20 seconds downtime and a reduction in data loss to a maximum of 3 minutes from the latest periodic ZFS snapshots sent to the DR site.
- Defined and documented systems administration processes and procedures, for future reference, including selective knowledge sharing with systems administrator peers, covering a structured set of guidelines, instructions and best practices when managing and maintaining IT infrastructure, ensuring efficient and consistent operation, and to address various challenges that may arise. This included, standard operating procedures, policies and guidelines, change management procedures, incident response plans, disaster recovery plans, ongoing capacity planning, audit and compliance documentation, version control, documentation update procedures and access controls.
- Ported essential software and tools to the OpenBSD platform, that included Berkeley Automounter (AutoFS), Kerberos (integrated with SSL enabled LDAP), SSH (integrated with Kerberos), and undisclosed software.
- Actively examined and modified the OpenBSD kernel source code, and gained insights into low-level security mechanisms ensuring that adaptations met the stringent security standards of the OpenBSD community.
- Amended kernel vnode data structures and operations when porting Berkeley Automounter, followed by configuration of automount maps in LDAP.
- Good understanding of specialised bespoke security in IT infrastructure for advancing secure computing environments.
- Ability to undertake complex R&D initiatives across IT security and systems administration.
- Enhanced skills in senior systems administration, security research and system software development.
- Contract was under NDA, hence the lack of technology specific details.

KRD Media

Full-Stack (MEAN) Developer

June 16 - Mar 18

- E-commerce website development utilised the JavaScript MEAN stack (MongoDB, ExpressJS, AngularJS and NodeJS) that consumed bespoke REST APIs for data-driven content (in accordance with the MVC paradigm for the separation of concerns).
- MEAN stack applications were secured using the package lusca (ExpressJS security middleware), configured to prevent:
 - Cross-Site Request Forgery (CSRF).
 - Content Security Policy (CSP).
 - Platform for Privacy Preferences Project headers (P3P).
 - XSSProtection (Cross-Site Scripting).
- Example web applications includes:
 - The Cactus Builder (a CMS for creating static webpages).
 - KRD Suite (an accounting, support ticket and task management solution).
 - Eposense (an EPOS system deployed in more than 200 businesses across Brighton & Hove).
- Involved in cloud and systems administration, mainly focused on version control and staged CI/CD deployments, across development, staging and production environments, with rollback capability.

Ultranix

Senior Systems Administrator

May 14 - Aug 15

- Live systems support and consultancy for Solaris, Linux and FreeBSD systems.
- Provided technical support to resolve BAU issues and continuous assessments for service improvement.
- Platform system design and consulting across capacity planning, provisioning and supporting cloud service migration.
- Responsibilities included monitoring and measuring service availability, latency and health using rpc.rstatd integrated with JPerfmer.
- Used the virtuous cycle to determine KPIs:
 - Deploy (time to deploy and build age).
 - Monitor (performance charts, percentage of automated detection and detection time).
 - Improve (time to mitigate and root-cause analysis completeness).
 - Code (bug age and repair debt).
- Improved the complete life cycle of clients' IT services, with due diligence applied in reducing unscheduled outages and downtime, by more than 50%.
- Reduced former support requests from an average of 13 a day to 3 (77% reduction).
- Manual workload was reduced by more than 66% via automation with Infrastructure-as-Code, enabled by Ansible, alongside bespoke Python scripts for repetitive administrative tasks.
- 33% decrease in workload expenditure leading to significant increase in resource productivity.

Moneo Solutions

Blockchain Consultant

Oct 13 - Apr 14

- Consulted with investors on cryptocurrency solutions.
- Conducted in-depth research on blockchain technologies.
- Set up high-performance SHA-256 ASICs for Bitcoin mining.
- Utilised high-spec hardware with GPUs, for optimised mining of multiple blockchain algorithms, such as script.

Sensory Guru

Software Engineer

Mar 11 - Sept 13

- Contracted in a software engineering role for a specialist sensory technology company.
 - Extended existing solutions, including bespoke stimulation and communication software.
 - Developed an application called Eye-FX, using Microsoft Visual C++ with MFC GUI design, for interfacing with infrared retina recognition hardware.
 - Used structured agile approach with UML use cases, class diagrams and OCL.
 - Interfaced with low-level routines in .NET DLLs that accessed Windows Presentation Foundation and hooked into custom hardware-based SDKs.
 - Processed XML configuration files with C++ using text streams and regular expressions.
 - Implemented a bespoke online licensing system using server-side license validation with PayPal integration.
 - Conducted systems administration for the most optimised deployment of the LAMP stack.
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Digicel with Fujitsu (Caribbean)
CNBC and Lehman Brothers with Morse
Barclays Bank with EDS
J. P. Morgan Chase with Phoenix IT Services
NCB with Fujitsu (Caribbean)
Sun Microsystems

Sun Systems Administrator
UNIX Systems Administrator
UNIX Solutions Architect
Sun Mission Critical Engineer
Sun Systems Administrator
UNIX Lab Engineer

- **Digicel with Fujitsu (Caribbean):** Repeat contract engagement with Fujitsu (Caribbean) for their client Digicel, a Caribbean telecoms company that expanded operations to the South Pacific, across Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu. Provided BAU systems administration, including installation and configuration, managing patch regression, making continuous assessments for improving IT infrastructure support, whilst providing 24 x 7 on-call support, including field engineering, for live systems across the South Pacific region.
 - **Lehman Brothers with Morse:** Main responsibilities were managing and administering Tier-1 services with 4-node stretched clusters (utilising Veritas Cluster Server) on Sun Fire 15K mainframe-class supercomputers, across London, New York and Tokyo, a global network that hosted financial data exceeding \$6 trillion. In the EMEA region, there were Red Hat Enterprise Linux deployments, utilising Kickstart with PXE across more than 1,400 business critical systems, alongside over 800 Solaris deployments, managed with JumpStart for automated network installations and configuration. The key focus of the UNIX team was on system integrity, whilst maintaining uptime and availability.
 - **CNBC with Morse:** Provisioned the installation and configuration of a Sun Microsystems server, that provided a more efficient financial markets ticker feed, an essential requirement for this financial media corporation. Compared to an optimised TCP/IP stack on a x86 Linux system, that was unable to process time-sensitive network data in near real-time for satellite broadcast, a default Solaris installation on Sun Microsystems hardware, a Sun Fire V480, improved network payload speeds by over 50% and reduced latency by more than 33%.
 - **Barclays Bank with Electronic Data Systems:** Engaged as a lead-architect for a storage consolidation project, addressing problems associated with managing data across a distributed environment and to deliver improved disaster recovery capabilities. This involved producing technical requirements specifications and comprehensive designs of clustering with associated storage topologies. Architecting the solution had to take into consideration the essential requirements for optimised and secure clustered multi-staged archiving spanning across a heterogeneous environment of more than 200 distributed sites, whilst facilitating core services to over 10,000 users. At time of engagement, Barclays held financial data covering 23% of the UK economy.
 - **J.P. Morgan Chase with Phoenix IT Services :** Provided on-site system support for all Sun Microsystems hardware products, ranging from legacy SPARCstation models to many UltraSPARC II architecture platforms. Furthermore, supported midframe-class UltraSPARC III servers, such as the Sun Fire 6800/4800. Also responsible for high-end systems, including Sun Fire 15K mainframe-class supercomputers, that utilised the UltraSPARC IV architecture.
 - **National Commercial Bank (Jamaica) with Fujitsu (Caribbean):** Contracted to work in Kingston, Jamaica, with Sun Microsystems' partner, Fujitsu (Caribbean), in a role that involved 24 x 7 on-call shift rotation for live systems support, including consultancy that focused on performance and security issues of a major infrastructure upgrade, a new generation banking solution comprising of Finacle Core Banking, BankAway - multi-channel solution and Finacle CRM, integrated with Solaris 8, SunCluster 3.0, Oracle 8i and Veritas (VxFS/VxVM). This application stack utilised a Storage Area Network with Storage Virtualisation Engine technologies on the Sun Fire 6800/4800 platform and Sun StorEdge 6900 series. The main highlight involved me compromising the security of the retail banking platform, along with a prescribed fix, including documenting further enhancements to security, such as how to safeguard and protect sensitive information assets with procedures for incident response and further investigation to give technical assurance regarding security. These business critical financial systems hosted more than 40% of Jamaica's GDP, valued at just under \$10 billion, providing financial services to 1.45 million customers.
 - **Sun Microsystems:** Worked with the leading UNIX vendor Sun Microsystems, to help sustain and develop a global lab infrastructure, with the full complement of supported hardware and Solaris. Provided fault-simulation resources to more than 250 engineers performing in-depth technical escalation support for corporate customers (requiring schematic and source code analysis). Developed and maintained in-house tools and applications in C/C++ and Perl. Responsibilities included product purchasing with capital approval. Involved with datacentre and network infrastructure design. Identified defects and bugs in hardware and system software products under development, the highlight being a serious bug discovered by me during a production HA cluster deployment, which involved source code analysis of Sun Cluster (over 1 million lines of C++ code). This was due to a unique condition during a cluster command operation executing SCSI-III commands on SCSI-II disks within a storage array, although these were reserved and unsupported. In response to this was a requirement to further study SCSI specifications and protocols, specifically focusing on Persistent Group Reservations (PGR) and Command Descriptor Blocks (CDB). Subsequently, the SCSI driver debug level was enabled in a live Solaris kernel to facilitate real-time reads of each CDB passed by the defective Sun Cluster storage command, allowing for framing the problem and troubleshooting with definitive proof to identify the precise root cause.
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