Curriculum vitae

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June 14, 2024

Latest version: https://www.stefansperling.de/stefan-sperling-cv.pdf

Professional Focus

- Software development, development-process consulting, developer tooling
- Computer networking technology, firewalls, routers, wireless, VPN
- Workshops and training for software developers and IT administrators
- Defensive IT security, code review and code auditing

Employment

- 2024 Founder of Chirpy Software SRL, Brussels, Belgium: https://chirpysoft.be
- 2015 – 2023 Self-employed IT developer and consultant, Berlin, Germany
- 2009 – 2014 Developer and consultant at elego Software Solutions GmbH, Berlin, Germany
- 2004 – 2008 Student Developer at elego Software Solutions GmbH, Berlin, Germany

Education

- 2009 MSc Software Development for Computer Networks, University College Cork, Ireland
- 2004 – 2008 BSc Computer Science, Free University of Berlin, Germany
- 2003 – 2004 Computer Science, Technical University of Berlin, Germany
- 2000 – 2003 German Abitur, Anna Freud Oberschule, Berlin, Germany
- 1999 – 2000 Leaving Certificate, Ashton School, Cork, Ireland

Skills

Formal Languages	C, C++, Java, Python, Perl, bourne shell, m4 (autoconf), make, SQL, Forth, TTCN3, LaTeX
Natural Languages	German (native), English (near native), French (intermediate)
Version Control	Apache Subversion, Git, Mercurial, Fossil, CVS
Operating systems	Linux (any variant), BSD (any variant)
Kernel	Device drivers, Network stack
Web	HTTP, HTML, CSS, JavaScript, PHP, WebDAV, XML
Networking	DHCP, DNS, OSPF, OLSR, BGP, IPv4, IPv6, pf, iptables, IPSec, OpenVPN, Wireguard, 802.11 WiFi, OpenWRT, GSM, Osmocom
Databases	PostgreSQL, SQLite
Configuration management	Ansible

Projects

- Software Heritage developer (2021 to present, `https://www.softwareheritage.org`)
  - With funding from the Sloan Foundation, via the French Institute for Research in Computer Science and Automation (Inria):
    - Development of a CVS repository loader for the Software Heritage archive
    - Audit of the existing SVN repository loader implementation
  - With funding from Inria:
    - Development of features for the Software Heritage Git repository loader
    - Add Git protocol version 2 support to Dulwich, a Python implementation of Git
- Osmocom developer at Sysmocom (2018, `https://www.sysmocom.de`)
  - Development of fixes for various software bugs filed in Osmocom's issue tracker
  - Development of automated GSM protocol tests with Eclipse Titan TTCN-3
  - Implemented feature which prevents overload if too many phones attempt to connect concurrently upon GSM base station start-up
  - Review of code contributions to Osmocom
- OpenBSD support and consulting (2015 to present)
  - Prototyping of a 300+ micro-firewall deployment at the German Federal Institute for Risk Assessment, enabling fully automated deployment of transparent firewalls with OpenBSD and Ansible for fine-grained network traffic analysis and filtering
  - Hands-on workshops for OpenBSD firewall administrators with original written training materials
  - Diagnosis of IPsec VPN stability issues
  - Implementation and maintenance of a high-availability firewall setup spanning two office locations in Berlin, based on OpenBSD with pf, carp, and IPsec
  - Support of design, implementation, and maintenance of a dozen+ firewall setup spanning two data centres in Luxembourg, based on OpenBSD with pf, carp, and IPsec
- OpenBSD developer (2008 to present, stsp@openbsd.org, `https://www.openbsd.org`)
  - Improved 'ospf6d' implementation of OSPF3 IPv6 routing protocol
  - Added UTF-8 support and POSIX locale enhancements
  - General network stack improvements, especially in IPv6 and wireless
  - Added and improved drivers for touchpads, card readers, ethernet and wifi devices
  - Improved software RAID boot support
  - Implemented support for encrypted RAID1 volumes
  - Switched Atheros USB wifi device driver to an open source firmware implementation
  - Patched 2017's WPA2 vulnerability "KRACK" in OpenBSD
  - With funding from the OpenBSD Foundation:
    - Added driver support for QCNFA765 Qualcomm ath11k wifi devices
  - With funding from `https://genua.de`:
    - Added 802.11n and 802.11ac support to wireless subsystem and wireless drivers
    - Implemented 802.11n and 802.11ac capable transmit rate control algorithms
    - Implemented 802.11n Tx aggregation support
    - Fixed interoperability problems with 802.11k/v/r access points
    - Added support for roaming between access points to drivers for Intel wifi devices
    - Patched 2021's 802.11 vulnerability "Fragattacks" in OpenBSD
    - General maintenance of the 802.11 stack and review of related contributions
    - Added driver support for 8260, 9260, AX200, AX210 Intel wifi devices
    - Added WPA crypto hardware offload support to several wireless drivers
    - Added support for Intel Elkhart Lake Ethernet

    - Added checksum and VLAN offloading to the Intel Elkhart Lake Ethernet driver
  - Improved hibernate support for laptops with root disk on emmc storage
  - Improved accessibility of OpenBSD for a disabled friend (see `https://stsp.name/maurice-laptop.html`)
  - Initiated the Game of Trees project (2017 to present), a new version control system which is compatible with Git repositories and was designed with OpenBSD development methodologies in mind (see `https://gameoftrees.org`)
  - With funding from `https://wirelessconnect.ie`:
    - New features and bug fixes for NSH, an interactive shell for OpenBSD routers for use by network administrators familiar with off-the-shelf networking equipment (see `https://www.nmedia.net/nsh/`)
  - Porting of third party applications, including Apache Subversion
  - Participation in and organization of developer meetings
  - Recurring speaker at the yearly EuroBSDcon conference
- Subversion developer (2007 to present, stsp@apache.org, `https://subversion.apache.org`)
  - Co-designed and co-implemented tree conflict detection for Subversion
  - Improved Subversion's authentication credentials cache
  - Continuous review and audit of Subversion code base
  - Implemented parts of Subversion's next-generation working copy library
  - Designed and implemented parts of Subversion's move-tracking support
  - Added 'svn patch' command for applying unidiff patch files
  - Improved Subversion's merge conflict resolver
  - Served as Subversion Release Manager several times
  - Served as Google Summer of Code mentor several times
  - Reviewed and committed contributed patches, fixed user-reported issues
  - Participation in and organization of developer meetings
  - Served as Apache Subversion Project Management Committee Chair (2017 to 2020)
  - Emeritus Member of the Apache Software Foundation
- Consulting services Apache Subversion (2008 to present, with `https://www.elego.de`)
  - In-depth workshops and training for Subversion users and administrators
  - Advice on advanced branching/merging strategies
  - Migration to Apache Subversion from other version control systems
  - Provided assistance during version upgrades of Apache Subversion deployments
  - Hands- on troubleshooting support for users and administrators
  - On-site diagnosis and fix of client- and server-side bugs
  - Repaired several instances of severe repository corruption
  - Communication of customer requirements to Subversion's developer community
- Community Wireless Networks (2005 to 2020)
  - Involved in setup, maintenance, and tear-down of a wifi network at one of the largest festivals in Germany (with `https://kulturkosmos.de`)
  - Setup and maintenance of nodes in Berlin's community wifi mesh network "Freifunk"
  - Deployment and maintenance of long-range (2km) roof-top directed wifi links
  - Porting of OLSR routing daemon to OpenBSD